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NOISE CONTROL BY-LAW

CITY OF HAMILTON

79 - 292

THIS CONSOLIDATION OF THE BY-LAW IS
PREPARED FOR CONVENIENCE ONLY, FOR
ACCURATE REFERENCE PLEASE CHECK
ORIGINAL BY-LAW



The Corporation of the City of Hamilton

BY-LAW NO. 94-155

To Amend

By-law No. 79-292

TO CONTROL NOISE

WHEREAS By-law No. 79-292 was passed on the 30th day of October, 1979, in accordance with Section 95 of the Environmental Protection Act, 1971 (now the Environmental Protection Act, R.S.O. 1990, Chapter E.19, Section 178);

AND WHEREAS the Province of Ontario has enacted NPC-216, concerning Residential Air Condition Devices, to replace NPC-116;

NOW THEREFORE the Council of The Corporation of the City of Hamilton enacts as follows:

1. Clause 3(d) of By-law No. 79-292 is deleted and replaced by the following:

From any air conditioning device of a type referred to in Schedule 1 in excess of the limits stated in Publication NPC-216 - Residential Air Conditioning Devices;

2. Section 26 of the said By-law is repealed and replaced by the following:

"Any person who contravenes any provision of this By-law is guilty of an offence and upon conviction, is liable to the penalty specified by Section 60 of the Provincial Offences Act, R.S.O. 1990, Chapter P.33.

3. This By-law comes into force upon approval by the Minister of Environment and Energy.

4. By-law No. 94-080 is hereby repealed.

PASSED this 27th day of September, 1994.

A. J. McIlwain
Acting CITY CLERK

[Signature]
MAYOR

This By-law is approved pursuant to the provisions of the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended at Toronto this _____ day of _____, 1994.



Minister of Environment and Energy

The Corporation of the City of Hamilton

BY-LAW NO. 94- 080

To Amend

By-law No. 79-292

TO CONTROL NOISE

WHEREAS By-law No. 79-323 was passed on the 30th day of October, 1979, in accordance with Section 95 of the Environmental Protection Act, 1971 (now the Environmental Protection Act, R.S.O. 1990, Chapter E.19, Section 178);

AND WHEREAS the Province of Ontario has enacted NPC-216, concerning Residential Air Condition Devices, to replace NPC-116;

NOW THEREFORE the Council of the Corporation of the City of Hamilton enacts as follows:

1. Clause 3(d) of By-law No. 79-292 is deleted and replaced by the following:

"3.(d) from any air conditioning device of a type referred to in Publication NPC-216 - Residential Air Conditioning Devices, unless,

- (i) the device was put into use prior to January 1, 1979; or
- (ii) the device bears a label affixed by the manufacturer or distributor which states,
 - A. the year of manufacture, and
 - B. that the device complies with the sound emission standard set out in Publication NPC-216- Residential Air Conditioning Devices as applicable to that type of device and date of manufacture; or
- (iii) the owner, operator, manufacturer or distributor provides proof that the device complies with the sound emission standard set out in Publication NPC-216 - Residential Air Conditioning Devices, as applicable to that type of device and date of manufacture;

2. Section 26 of the said By-law is repealed and replaced by the following:

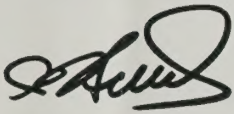
"Any person who contravenes any provision of this By-law is guilty of an offence and, upon conviction, is liable to the penalty specified by Section 60 of the Provincial Offences Act, R.S.O. 1990, Chapter P.33.



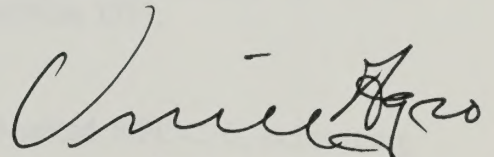
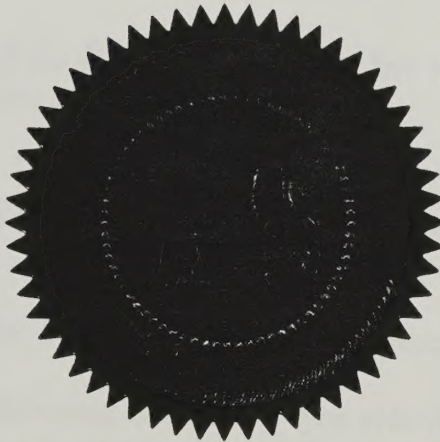
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3. This By-law comes into force upon approval by the Minister of the Environment.

PASSED this 10th day of May, 1994.



CITY CLERK



Acting MAYOR

This By-law is approved pursuant to the provisions of the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended at Toronto this day of , 1994.

Minister of the Environment

(1994) (report no.) R.T.E.C., (date)

The Corporation of the City of Hamilton

BY-LAW NO. 94-155

To Amend

By-law No. 79-292

TO CONTROL NOISE

WHEREAS By-law No. 79-292 was passed on the 30th day of October, 1979, in accordance with Section 95 of the Environmental Protection Act, 1971 (now the Environmental Protection Act, R.S.O. 1990, Chapter E.19, Section 178);

AND WHEREAS the Province of Ontario has enacted NPC-216, concerning Residential Air Condition Devices, to replace NPC-116;

NOW THEREFORE the Council of The Corporation of the City of Hamilton enacts as follows:

1. Clause 3(d) of By-law No. 79-292 is deleted and replaced by the following:

From any air conditioning device of a type referred to in Schedule 1 in excess of the limits stated in Publication NPC-216 - Residential Air Conditioning Devices;

2. Section 26 of the said By-law is repealed and replaced by the following:

"Any person who contravenes any provision of this By-law is guilty of an offence and upon conviction, is liable to the penalty specified by Section 60 of the Provincial Offences Act, R.S.O. 1990, Chapter P.33.

3. This By-law comes into force upon approval by the Minister of Environment and Energy.
4. By-law No. 94-080 is hereby repealed.

PASSED this 27th day of September, 1994.

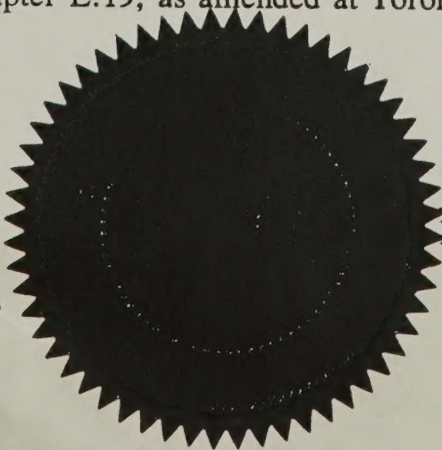
Acting A. J. Holbrook
CITY CLERK

[Signature]
MAYOR

This By-law is approved pursuant to the provisions of the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended at Toronto this _____ day of _____, 1994.

Minister of Environment and Energy

BYLAW.PENALTIES



The Corporation of the City of Houston

BY-LAWS OF THE

TO AMEND

BY-LAWS OF THE

TO CONSIDER

IT IS HEREBY ORDERED BY THE BOARD OF THE CITY OF HOUSTON, TEXAS, that the following amendments to the City of Houston, Texas, be adopted and that the City of Houston, Texas, be authorized to execute the same.

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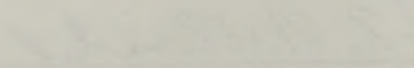
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MAYOR


CITY CLERK

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The Corporation of the City of Hamilton

BY-LAW NO. 87-220

To Amend:

Noise Control By-law No. 79-292

Respecting:

VARIOUS AMENDMENTS

RESIDENTIAL AIR CONDITIONERS AND HEAT PUMPS;
CHAIN SAWS; LAWN MOWERS; BLASTING AND IMPACT NOISE;
NOISE SOURCES IN INDUSTRIAL BUFFER AREAS;
CONSTRUCTION NOISE; AFTER HOUR DOMESTIC NOISE;
LOUDSPEAKERS IN COMMERCIAL AREAS

WHEREAS By-law No. 79-292, passed on the 30th day of October, 1979, in accordance with section 95a of The Environmental Protection Act, 1971, as enacted by section 3 of The Environmental Protection Act, 1974 (No. 2), [now The Environmental Protection Act, R.S.O. 1980, Chapter 14, section 138], provided for the enactment of a By-law relating to noise and vibrations.

NOW THEREFORE the Council of The Corporation of the City of Hamilton enacts as follows:

1. (1) Section 1 of By-law No. 79-292 is amended by adding the following paragraphs thereto:

5.1 : "commercial area" means an area of the municipality designated as a commercial area in schedule 5 of this by-law.

11.1 "district" or "District" has the same meaning as in By-law No. 6593.

12.1 "holiday" means a holiday as defined in The Interpretation Act, Boxing Day and any day proclaimed by the head of council as a civic holiday.

12.2 "industrial area" means an area of the municipality designated as an industrial area in schedule 5 of this by-law.

(2) Paragraph 19 of section 1 of the said by-law is amended by striking out "inspector" in the first line and inserting in lieu thereof "officer".

(3) Paragraph 22 of section 1 of the said by-law is amended by inserting "section 1 of" after "zone in", in the second line.

(4) Paragraph 23 of section 1 of the said by-law is amended by inserting "section 2 of" after "area in", in the second line.

2. (1) Subsection 2(1) of the said by-law is amended by adding thereto the following clause:

(aa) from an act listed in section 1 of schedule 2.1 - Particular Prohibitions such that the level of the resultant sound at a point of reception in a commercial area, exceeds the applicable sound level limit prescribed in schedule 1, Publication NPC-105 - Stationary Sources;

(2) The said by-law is amended by adding thereto schedule 2.1, hereto annexed as schedule "C".

3. (1) Clause 3(c) of the said by-law is amended by striking out "domestic outdoor power tool" and "Domestic Outdoor Power Tools" wherever the words appear in the clause and substituting in lieu thereof "Outdoor Power Tools".

(2) Schedule 1 to the said by-law is amended by striking out Publication NPC-117 and substituting in lieu thereof Publication NPC-117 REVISED 1982-08-26 (NEW NUMBER NPC-210) hereto annexed as schedule "B" and forming part of this by-law.

4. Section 3 of the said by-law is amended by adding thereto the following clauses:

(f) from any blasting referred to in schedule 1, Publication NPC-119 - Blasting, unless the blasting complies with the sound emission standards in Publication NPC-119;

(g) from any impact sound referred to in schedule 1, Publication NPC-105 - Stationary Sources, unless the impact sound complies with the sound emission standards in Publication NPC-105 - Stationary Sources.

5. (1) Clause 3(d) of the said by-law is amended by striking out "Residential Air Conditioners" wherever the words appear in the clause and substituting in lieu thereof "Residential Air Conditioners and Heat Pumps".

(2) Schedule 1 to the said by-law is amended by striking out Publication NPC-116 and substituting in lieu thereof Publication NPC-116 REVISED 1982-08-26 hereto annexed as schedule "A" and forming part of this by-law.

6. Section 5 of the said by-law is amended by striking out the numeral "6" in the last line and inserting in lieu thereof "5".

7. (1) Paragraph 6 of section 8 of By-law No. 79-292 is amended by striking out at the end thereof "and a description of the work or source".

(2) Subsection 9(1) of the said by-law is amended by striking out the numeral "5" at the end thereof and inserting in lieu thereof "6".

8. Section 12 of the said by-law is amended by inserting after "objection to" in the second line "the".

9. Section 15 of the said by-law is amended by striking out "Pollution Control Committee" in the third line and inserting in lieu thereof "Transport and Environment Committee" and by striking out the numeral "5" at the end thereof and inserting in lieu thereof "6".

10. The said by-law is amended by adding thereto the following section:

20a. (1) Where a person emits or causes or permits the emission of sound contrary to any provision of this by-law, the Chief Noise Control Officer may issue an order to comply requiring that the person emitting or causing or permitting the emission of sound cease and desist immediately on or before a specified time, upon service of the order upon the person or his or her agent or representative.

(2) Section 20 shall not apply to an order issued under this section.

11. Subsection 25(2) of the said by-law is amended by striking out "noise control inspector" in the first line and inserting in lieu thereof "noise control officer".

12. Schedule 1 to the said by-law is amended by striking out "Domestic" in line nine of the "Index of Publications".

13. Schedule 2 to the said by-law is amended by striking out "29-292" in the heading and inserting in lieu thereof "79-292".

14.(1) Section 5 of schedule 3 to the said by-law is repealed and the following substituted therefor:

- | | | | |
|---|-----|-----------------------------------|-----------------------------------|
| 5. The operation of construction equipment in connection with construction. | (a) | Sundays 12:01 a.m. to 11:59 p.m. | Sundays 12:01 a.m. to 11:59 p.m. |
| | (b) | Holidays 12:01 a.m. to 11:59 p.m. | Holidays 12:01 a.m. to 11:59 p.m. |
| | (c) | Weekdays 7:00 p.m. to 7:00 a.m. | Weekdays 11:00 p.m. to 7:00 a.m. |

(2) Section 12 of schedule 3 to the said by-law is amended by striking out "domestic" in the second line.

15. Schedule 4 to the said by-law is amended by striking out "(Section 23)" in the heading and inserting in lieu thereof "(Section 22)".

16. (1) Paragraph 2 of schedule 5 to the said by-law is amended by striking out the first three lines and inserting in lieu thereof "Except as provided in section 4, the following districts comprised in Residential Districts in clause 2(2)A of Zoning By-law No. 6593 are hereby designated."

(2) Paragraph 3 of schedule 5 of the said by-law is repealed and the following substituted therefor:

INDUSTRIAL AREAS

3. The following districts comprised in Industrial Districts in clause 2(2)E of Zoning By-law No. 6593, are hereby designated as industrial areas:

1. "J", "JJ", "J-3" Districts.
2. "K", "KK" Districts.

4. A residential area referred to in section 2 shall be deemed not to include land and a residential use shall not be deemed to mean land,

(a) within a 50 metre wide band extending along the whole perimeter of the industrial areas adjacent to and,

(i) south of Barton Street;

(ii) north of Barton Street and west of Wellington Street; and

(b) north of Barton Street and east of Wellington Street,

unless the stationary source referred to in clause 2(1)(a) or any act referred to in

clause 2(1)(c) of this by-law is non-industrial and is located in a residential area or in a residential use, the whole or part of which is within the 50 metre wide band or within a residential area or use north of Barton Street and east of Wellington Street.

5. Where the land is not deemed to be included in a residential area or deemed not to mean a residential use under section 4, the land shall, for the purpose of this by-law, be deemed to be included in an adjacent industrial area.

(3) Schedule 5 of the said by-law is amended by adding thereto the following paragraphs:

COMMERCIAL AREAS

4. The following districts comprised in Commercial Districts in clause 2(2)D of Zoning By-law No. 6593, are hereby designated as commercial areas:

1. "G", "G-1", "G-2", "G-3", "G-4" Districts.
2. "H", "HH" Districts.
3. "I" District.

5. The following districts referred to in subsection 5(1) of Zoning By-law No. 6593 are hereby designated as commercial areas:

1. "CR-1", "CR-2", "CR-3" Districts.
2. "U" District.

17. Schedule 6 to the said by-law is amended by striking out "(Section 6)" in the heading and inserting in lieu thereof "(Section 5)".

18. This by-law comes into force upon approval by the Minister of The Environment.

PASSED this 28th day of July A.D. 1987.

[Signature]
City Clerk

[Signature]
Mayor

(1985) 15 R.T.E.C. 10, 11, 12, Sept. 28
(1986) 12 R.T.E.C. 68, June 24
(1986) 21 R.T.E.C. 28, December 9
(1987) 6 R.T.E.C. 11, March 12

SCHEDULE "A"

To By-law No. 87- 220

NEW NUMBER NPC-209

Publication NPC-116

REVISED 1982-08-26

Residential Air Conditioners and Heat Pumps

1. Scope

This Publication sets sound level limits for residential air conditioners and heat pumps.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101, Technical Definitions.

3. Sound Level Limits

Tables 116-1 and 116-2 list the sound level limits and the appropriate measurement procedures for residential air conditioners and heat pumps.

TABLE 116-1

Sound Level Limits

For Central Air Conditioners and Heat Pumps

Date of Installation	L_{eq} (dBA)	Measurement Procedure
Before January 1, 1980	50	NPC-103, Procedure for Measurement of Sound, Section 3 or Section 4
January 1, 1980 and after	45	

TABLE 116-2

Sound Level Limit For Window or
Through-the-Wall Air Conditioning Devices

Date of Installation	L_{eq} (dBA)	Measurement Procedure
January 1, 1978 and after	50	NPC-103, Procedure for Measurement of Sound, Section 3 or Section 4

SCHEDULE "B"

To By-law No. 87-220

NEW NUMBER NPC-210

Publication NPC-117

REVISED 1982-08-26

Outdoor Power Tools

1. Scope

This Publication sets sound emission limits for various non-stationary outdoor power tools when the equipment is operated in or adjacent to a Residential Area or a Quiet Zone.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101, Technical Definitions.

3. Sound Emission Limits

Tables 117-1 and 117-2 list sound emission limits and the appropriate measurement procedures for powered lawn mowers and chain saws operating in or adjacent to a Residential Area or Quiet Zone.

TABLE 117-1

Sound Emission Limit for Powered Lawn Mowers

Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103, Procedures for Measurement of Sound, Section 8
---------------------	---

dBA

January 1, 1979 and after

76

TABLE 117-2Sound Emission Limit for Chain Saws

Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103, Procedures for the Measurement of Sound, Section 8
January 1, 1979 and after	dBA 76

SCHEDULE "C"

To By-law No. 87-220

Schedule 2.1

By-law No. 79-292

Particular Prohibitions

[Section 2(1)(aa)]

1. The stationary or mobile operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.

THE CORPORATION OF THE CITY OF HAMILTON

BY-LAW NO. 79 - 292

TO CONTROL NOISE

WHEREAS section 95a of The Environmental Protection Act, 1971 as enacted by section 3 of The Environmental Protection Act, 1974 (No. 2) provides as follows:

- 95a (1) The councils of local municipalities may, subject to the approval of the Minister, pass by-laws,
- (a) regulating or prohibiting the emission of sounds or vibrations;
 - (b) providing for the licensing of persons, equipment and premises, or any of them, with respect to the emission of sounds or vibrations;
 - (c) prescribing maximum permissible levels of sounds or vibrations that may be emitted;
 - (d) prescribing procedures for determining the levels of sounds or vibrations that are emitted;

and such a by-law may make different provision for different areas of a local municipality and may make provisions for exempting any person, equipment or premises from any provision of the by-law for such period of time and subject to such terms and conditions as may be set out or provided for in the by-law.

- (2) A by-law passed by the council of a local municipality pursuant to subsection 1 may adopt by reference, in whole or in part, with such changes as the council considers necessary any code, formula, standard, or procedure and may require compliance with any code, standard or procedure so adopted.
- (3) Part XXI of The Municipal Act applies to by-laws passed under this section.

AND WHEREAS it is desirable to regulate or prohibit undesired sound and vibration in order to produce a satisfactory acoustic environment wherein the character and magnitude of all sounds or vibrations are compatible with the satisfactory use of any premises or other place for its intended purpose.

NOW THEREFORE the Council of The Corporation of the City of Hamilton enacts as follows:

1. In this by-law all the words which are of a technical nature and are related to sound and vibration shall have the meanings specified for them in schedule 1, Publication NPC-101 - Technical Definitions; and
 1. "applicable Publication" means a Publication referred to in the provisions of this by-law including a schedule hereto;
 2. "authorized emergency vehicle" has the same meaning as in Traffic By-Law No. 66-100;
 3. "certificate" means a certificate of Competency in Environmental Acoustics Technology of a specified class issued by the Minister;
 4. "Chief Noise Control Officer" means the official who is the certificate holder appointed by the council for the purpose of the administration and enforcement of this by-law;
 5. "City" means the corporation of the City of Hamilton;
 - [6. "constable" means a police constable who is a member of the Hamilton-Wentworth Regional Police Force;
 7. "construction" includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith;
 8. "construction equipment" means any equipment or device designed and intended for use in construction, or material handling, including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders, or other material handling equipment;
 9. "construction site" means the area or portion of land used for construction or any other area used for any purpose related to the construction or for any related purpose;
 10. "conveyance" includes a vehicle and any other device used to transport a person or persons or goods from place to place but does not include any vehicle or device operated only within the premises of a person;
 11. "council" means the council of the Corporation of the City of Hamilton;

12. "highway" includes a common and public highway, street, avenue, parkway, driveway, square, place, bridge, viaduct or trestle designed and intended for or used by, the general public for the passage of vehicles;
13. "Minister" means the Minister of the Environment;
14. "Ministry" means the Ministry of the Environment;
15. "motor vehicle" includes an automobile, motor-cycle and any other vehicle propelled or driven otherwise than by muscular power, but does not include the cars of electric or steam railways, or other motor vehicle running only upon rails, or a motorized snow vehicle, traction engine, farm tractor, self-propelled implement of husbandry or road building machine within the meaning of The Highway Traffic Act;
16. "motorized conveyance" means a conveyance propelled or driven otherwise than by muscular, gravitational or wind power;
17. "municipality" means the land within the geographic limit of the Corporation of the City of Hamilton;
18. "noise" means unwanted sound;
19. "noise control inspector" means any person who is a certificate holder appointed to assist the Chief Noise Control Officer;
- [20. "point of reception" means any point on a premises of a person where sound or vibration originating from other than those premises is received;
21. "Publication" means a specified publication of the Noise Pollution Control Section of the Pollution Control Branch of the Ministry of the Environment named in schedule 1;
- ? 22. "quiet zone" means an area of the municipality designated as a quiet zone in schedule 5 of this by-law;
- \ 23. "residential area" means an area of the municipality designated as a residential area in schedule 5 of this by-law;
- | 24. "source" or "source of sound or vibration" means an activity, matter, thing, or tangible personal property or real property, from which sound or vibration is emitted;
- 25. "stationary source" means a source of sound which does not normally move from place to place and includes the premises of a person as one stationary source unless the dominant source on the premises is construction equipment or a conveyance;

2. (1) No person shall emit or cause to permit the emission of sound resulting:

- (a) from a stationary source such that the level of resultant sound at a point of reception located in a Quiet Zone or Residential Area, exceeds the applicable sound level limit prescribed in schedule 1, Publication NPC-105 - Stationary Sources;
 - (b) from an act listed in schedule 2 - General Prohibitions, and which sound is clearly audible at a point of reception;
 - (c) from any act listed in schedule 3 - Prohibitions by Time and Place, if clearly audible at a point of reception located in an area of the municipality specified in schedule 3 within a prohibited time shown for such an area.
- (2) Clause (a) of subsection 1 does not apply to impulsive sound, motorized conveyances or to blasting;
- (3) Clause (a) of subsection 1 and sections 2, 4, 5, 8 and 10 of schedule 3 do not apply to the area of the City bounded by Barton Street, Wellington Street, the southerly limits of Hamilton Harbour and the easterly limits of the City.

3. No person shall emit or cause or permit the emission of any sound,

- (a) from any piece of construction equipment of a type referred to in schedule 1, Publication NPC-115 - Construction Equipment, at a work site, any part of which is located within 600 m of a Residential Area or a Quiet Zone, unless,
 - (i) the piece of construction equipment was put into use prior to January 1, 1979; or
 - (ii) the piece of construction equipment bears a label affixed by the manufacturer or distributor which states,
 - A. the year of manufacture, and
 - B. that the item of equipment complies with the residential sound emission standards set out in Publication NPC-115 - Construction Equipment, as applicable to that type of equipment and date of manufacture; or
 - (iii) the owner, operator, manufacturer or distributor provides proof that the item of equipment complies with the residential sound emission standard set out in Publication NPC-115 - Construction Equipment, as applicable to that type of equipment and date of manufacture;
- (b) from any piece of construction equipment of a type referred to in schedule 1, Publication NPC-115 - Construction Equipment, at a work site, any part of which is located in a Quiet Zone, unless,
 - (i) the piece of construction equipment bears a label affixed by the manufacturer or distributor which states,
 - A. the year of manufacture, and
 - B. that the item of equipment complies with the Quiet Zone sound emission standard set out in Publication NPC-115 - Construction Equipment as applicable to that type of equipment and date of manufacture; or

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- (ii) the owner, operator, manufacturer or distributor provides proof that the item of equipment complies with the Quiet Zone sound emission standard set out in Publication NPC-115 - Construction Equipment, as applicable to that type of equipment and date of manufacture;
- (c) from any domestic outdoor power tool of a type referred to in schedule 1, Publication NPC-117 - Domestic Outdoor Power Tools, which device is powered by an electric motor or an internal combustion engine, unless,
 - (i) the device was put into use prior to January 1, 1979; or
 - (ii) the device bears a label affixed by the manufacturer or distributor which states,
 - A. the year of manufacture, and
 - B. that the device complies with the sound emission standard set out in Publication NPC-117 - Domestic Outdoor Power Tools, as applicable to that type of device and date of manufacture, or
 - (iii) the owner, operator, manufacturer or distributor provides proof that the device complies with the sound emission standard set out in Publication NPC-117 - Domestic Outdoor Power Tools, as applicable to that type of device and date of manufacture;
- (d) from any air conditioning device of a type referred to in schedule 1, Publication NPC-116 - Residential Air Conditioners, unless,
 - (i) the device was put into use prior to January 1, 1979; or
 - (ii) the device bears a label affixed by the manufacturer or distributor which states,
 - A. the year of manufacture, and
 - B. that the device complies with the sound emission standard set out in Publication NPC-116 - Residential Air Conditioners as applicable to that type of device and date of manufacture; or
 - (iii) the owner, operator, manufacturer or distributor provides proof that the device complies with the sound emission standard set out in Publication NPC-116 - Residential Air Conditioners, as applicable to that type of device and date of manufacture;
- (e) from any motorized conveyance of a type referred to in schedule 1, Publication NPC-118 - Motorized Conveyances, unless the motorized conveyance complies with the sound emission standard set out in Publication NPC-118 - Motorized Conveyances, as applicable to that type of motorized conveyance and date of manufacture.

4. Where clause (a) of subsection 1 of section 2 apply to a source of sound, the less restrictive provision shall prevail.

5. Notwithstanding any other provision of this by-law, this by-law shall not apply to a person who emits or causes or permits the emission of sound or vibration in connection with any of the traditional, festive, religious activities or other activities listed in schedule 6.

6. (1) The council may, upon application by any person,

- (a) exempt the applicant; or
- (b) exempt the applicant for any exemption of lesser effect; or
- (c) exempt the applicant on such terms and conditions as it may determine; or
- (d) refuse to grant any exemption,

from any provision of this by-law with respect to any source of sound or vibration.

(2) Any exemption shall specify the period of time during which the exemption is in effect and may be made upon such terms and conditions as council requires.

7. Every application for exemption shall be made to the council in writing and lodged with the Chief Noise Control Officer.

8. The application shall be made in Form 1 and shall provide all the information required by the form including:

- 1. Name and address of applicant;
- 2. The full and complete description of the work or source of the sound or vibration for which exemption is sought;
- 3. The period of time for which exemption is sought;
- 4. A full and complete statement of the reasons why the exemption is sought;
- 5. A statement of the actions,
 - (a) presently being taken or continued; or
 - (b) proposed and planned,to comply with the provisions of this by-law;
- 6. The provisions of this by-law from which exemption is sought and a description of the work or source.

9. (1) The council may require an applicant to provide such further and other information as may be necessary to consider an application made under section 5.

(2) No application shall be deemed to be complete until all information required in Form 1, and by subsection 1 has been provided by the applicant.

10. Notice of intention to apply for an exemption shall be,

(a) served on the Chief Noise Control Officer; and

(b) published once in a newspaper having general circulation in the municipality of the City of Hamilton within fourteen days but not later than seven days prior to the date application is intended to be made.

11. The notice of intention shall be in Form 2 and shall include the information required under paragraphs 1, 2, 3, 4, and 5 of section 8 and the date on which the application is intended to be made to council.

12. Any person who objects to a proposed application shall lodge a notice of objection to approval of the application with the applicant not later than six days prior to the date on which the application is intended to be made, setting out the reasons for the objection and all relevant facts.

13. The applicant shall lodge with the Chief Noise Control Officer an affidavit of publication to which is attached all objections and any submission the applicant may make in reply to such objections marked as exhibits.

14. An application shall be deemed to have been made to council by lodging the application and the affidavit referred to in section 13, with the Chief Noise Control Officer.

15. Upon receipt of a complete application by the Chief Noise Control Officer and the affidavit of publication, he shall prepare or cause to be prepared a report to the Pollution Control Committee of Council on the application for exemption under section 5.

16. Where an application is not approved or approved upon terms and conditions or approved to a lesser extent than the exemption applied for, the council shall in its decision set out reasons therefor and shall serve a copy of the decision upon the applicant and the decision of the council is final.

17. Upon report of the Chief Noise Control Officer that there is non-compliance with an exemption or the terms and conditions of an approval of an exemption, the council may withdraw its approval or fix new or revised terms and conditions.

18. Except where the applicant does not comply with section 20, no such withdrawal of approval or fixing of new or revised terms and conditions shall take place prior to considering a written submission from the applicant in reply to the alleged non-compliance.

19. (1) Where there is non-compliance with the exemption or the terms and conditions thereof, the Chief Noise Control Officer, or a noise control inspector or a constable may serve an order to comply in Form 3 on the person to whom an exemption was allowed.

(2) The person referred to in subsection 1 shall forthwith comply with the order.

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20. No submission in reply shall be considered by council unless it is made in writing and received by the Chief Noise Control Officer within seven days of the service of the order to comply.

21. Where reference is made to a Publication in this by-law, the Publication is attached to this by-law and is hereby adopted as part of this by-law.

22. Notwithstanding any other provision of this by-law, this by-law does not apply to a person who emits or causes or permits the emission of sound or vibration in connection with any of the activities listed in schedule 4.

23. Notwithstanding any other provision of this by-law, it shall be lawful during an emergency to emit or cause or permit the emission of sound or vibration in connection with emergency measures undertaken,

(a) for the immediate health, safety or welfare of the inhabitants or any of them; or

(b) for the preservation or restoration of property,

unless such sound or vibration is clearly of a longer duration or of a nature more disturbing than is reasonably necessary for the accomplishment of such emergency purpose.

24. (1) Where a court of competent jurisdiction declares any provision of this by-law invalid, the provision shall be deemed conclusively to be severable from the by-law.

(2) No part of this by-law not declared by a court of competent jurisdiction to be invalid shall be affected by the provision severable from the by-law.

25. (1) The Chief Noise Control Officer shall administer and enforce this by-law.

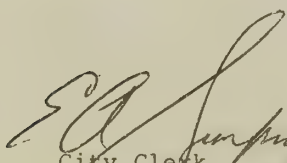
(2) Such noise control inspectors may be appointed as are necessary for the purpose of enforcement of this by-law.

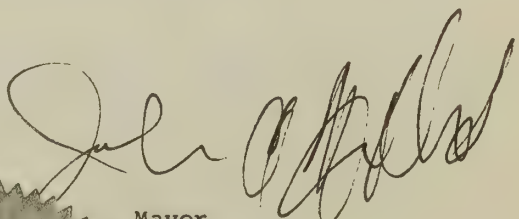
26. Any person who contravenes any provision of this by-law is guilty of an offence and is liable on summary conviction to a fine not exceeding \$1,000.00 exclusive of costs.

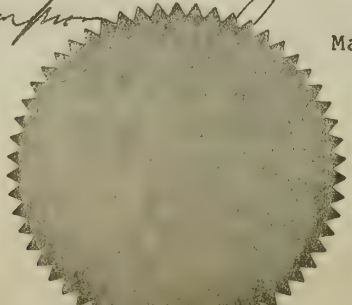
27. This by-law may be cited as "The Noise Control By-law".

28. This by-law comes into force on January 1, 1980.

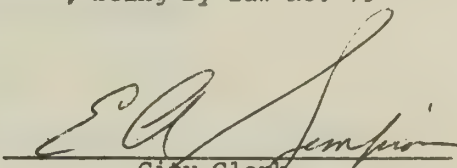
PASSED this 30th day of October, A.D., 1979.


City Clerk

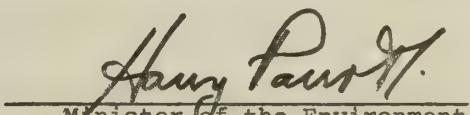

Mayor



I hereby certify the foregoing to be a complete and true copy of Bill No. 297, being By-law No. 79- 292


City Clerk

This By-law is approved pursuant to the provisions of The Environmental Protection Act, 1971, as amended, at Toronto, this 31st day of October 1979.


Minister of the Environment

7. Description of actions proposed to be taken to comply with

By-law: _____

8. Provisions of By-law from which exemption sought: _____

9. Agent or other representative of Applicant Yes _____ No _____

10. Name, address and telephone number of owner _____

(Date of Application)

(Applicant)

Insufficient space - add.

Corporate applicant - use proper legal name.

Firm or Partnership - application in name of one or more members.

Individual - use full and proper name.

FORM 2

(SECTION 11)

TO BY-LAW NO. 79-292

NOTICE OF APPLICATION OF INTENTION TO APPLY FOR EXEMPTION

NOTICE OF APPLICATION BY _____
TO THE COUNCIL OF THE CITY OF HAMILTON.

TAKE NOTICE that (name in full) intends to apply (state whether as owner, agent, representative, etc. and if other than owner, state name and address of owner) to the Council of The Corporation of the City of Hamilton on the _____ day of _____, 19____ for approval of exemption from The Noise Control By-law for the period from _____ to _____, 19____, in respect of work or source located at _____ and more particularly described as follows (describe work or source), for the following reasons (enumerate reasons).

AND TAKE NOTICE that the above named applicant is presently taking or continuing to take the following actions to comply with The Noise Control By-law (describe actions) and proposes and is planning to take the following actions to comply with the by-law (describe actions).

AND TAKE NOTICE that any person may object to approval of the application by sending a notice of objection to the Applicant by prepaid post at the address in this notice set out below not later than six days prior to the date on which the application is intended to be made to the council and setting out the reasons for the objections and all relevant facts.

THIS NOTICE FIRST PUBLISHED on the _____ day of _____
19____

(Name of Applicant)

(Address of Applicant)

FORM 3

(SECTION 19)

TO BY-LAW NO. 79-292



THE CORPORATION OF THE CITY OF HAMILTON

FILE NO:

HAMILTON, ONTARIO

ORDER TO COMPLY

ISSUED TO	LOCATION

TAKE NOTICE THAT THE
 AT THE ABOVE LOCATION IS IN CONTRAVENTION OF BY-LAW NO. 79-292
 AS OUTLINED BELOW:

AND TAKE NOTICE FURTHER THAT YOU AS THE OWNER/CONSTRUCTOR/OR PERSON APPARENTLY IN POSSESSION
 ARE HEREBY ORDERED TO COMPLY FORTHWITH/WITHIN

AND TAKE NOTICE FURTHER THAT IN DEFAULT OF COMPLIANCE WITH THE FOREGOING, YOU WILL BE LIABLE
 UPON CONVICTION, TO THE PENALTIES PROVIDED BY THE SAID BY-LAW.

ORDER RECEIVED BY:	ORDER ISSUED BY INSPECTOR:
NAME:	NAME
DATE:	DATE:

10/30/79

-844-
14

SCHEDULE 1

STANDARDS, PROCEDURES,

LIMITS AND GUIDELINES

Index of Publications

Publication NPC-101	Technical Definitions
Publication NPC-102	Instrumentation
Publication NPC-103	Procedures
Publication NPC-104	Sound Level Adjustments
Publication NPC-105	Stationary Sources
Publication NPC-106	Sound Levels of Road Traffic
Publication NPC-115	Construction Equipment
Publication NPC-116	Residential Air Conditioners ✓
Publication NPC-117	Domestic Outdoor Power Tools ✓
Publication NPC-118	Motorized Conveyances
Publication NPC-119	Blasting

Publication NPC-101Technical Definitions1. Technical Terminology and Standards

The following terminology and standards shall be used for the purposes of any Noise Control By-Law enacted pursuant to The Environmental Protection Act and all Publications of the Noise Pollution Control Section of the Pollution Control Branch of the Ministry of the Environment. The definition of any technical word used in such By-Law or this or any such Publication and not herein defined shall be the definition appearing in the applicable Publication of the Canadian Standards Association (CSA), the American National Standards Institute (ANSI), the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), the Society of Automotive Engineers (SAE), or the Machinery and Equipment Manufacturers Association of Canada (MEMAC):

(1) Acoustic Calibrator

An "Acoustic Calibrator" is an electro-mechanical or mechanical device intended for the calibration of sound level meters and meeting the specifications of Publication NPC-102
- Instrumentation, for Acoustic Calibrators.

(2) A-Weighting

"A-weighting" is the frequency weighting characteristic as specified in IEC 123 or IEC 179 and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound.

(3) A-weighted Sound Pressure Level

The "A-weighted sound pressure level" is the sound pressure level modified by application of the A-weighting. It is measured in decibels, A-weighted, and denoted dBA.

(4) Beating

"Beating" is the characteristic of a sound which has an audible cyclically varying sound level, caused by the interaction of two sounds of almost the same frequency.

(5) Buzzing Sounds

A "buzzing sound" is a sound which is characterized by the presence of a large number of related discrete harmonics in its frequency spectrum. These harmonics together with the fundamental frequency produce a sound which subjectively is termed a "buzz". Examples are sounds from a buzzer or a chain saw.

(6) Decibel

The "decibel" is a dimensionless measure of sound level or sound pressure level; see sound pressure level.

(7) Effective Sound Pressure

The "effective sound pressure" at a point is the root-mean square value of the instantaneous sound pressure, over a time interval, at the point under consideration as detected with a sound level meter meeting the requirements of Publication NPC-102 - Instrumentation.

(8) Equivalent Sound Level

The "equivalent sound level" sometimes denoted L_{eq} , is the value of the constant sound level which would result in exposure to the same total A-weighted energy as would the specified time-varying sound, if the constant sound level persisted over an equal time interval. It is measured in dBA.

The mathematical definition of equivalent sound level (L_{eq}) for an interval defined as occupying the period between two points in time t_1 and t_2 is:

$$L_{eq} = 10 \log_{10} \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} \frac{p^2(t)}{p_r^2} dt$$

where $p(t)$ is the time varying A-weighted sound pressure and p_r is the reference pressure of 20 μ Pa.

(9) Fast Response

"Fast response" is a dynamic characteristic setting of a sound level meter meeting the applicable specifications of Publication NPC-102 - Instrumentation.

(10) Frequency

The "frequency" of a periodic quantity is the number of times that the quantity repeats itself in a unit interval of time. The unit of measurement is hertz (Hz) which is the same as cycles per second.

(11) General Purpose Sound Level Meter

A "General Purpose Sound Level Meter" is a sound level meter which meets the specifications of Publication NPC-102 - Instrumentation, for General Purpose Sound Level Meters.

(12) Impulse Response

"Impulse response" is a dynamic characteristic setting of a sound level meter meeting the specifications of Publication NPC-102 - Instrumentation, for Impulse Sound Level Meters.

(13) Impulsive Sound

An "impulsive sound" is a single pressure pulse or a single burst of pressure pulses, as defined by IEC 179A, First supplement to IEC 179, Sections 3.1 and 3.2.

(14) Impulse Sound Level

The "impulse sound level" is the sound level of an impulsive sound as measured with an Impulse Sound Level Meter set to impulse response. It is measured in A-weighted decibels, denoted dBAI.

(15) Impulse Sound Level Meter

An "Impulse Sound Level Meter" is a sound level meter which meets the specifications of Publication NPC-102 - Instrumentation, for Impulse Sound Level Meters.

(16) Integrating Sound Level Meter

An "Integrating Sound Level Meter" is a sound level meter which is capable of being used to derive the equivalent sound level (L_{eq}) and which meets the specifications of Publication NPC-102 - Instrumentation, for Type B Integrating Sound Level Meters.

(17) Logarithmic Mean Impulse Sound Level

The "Logarithmic Mean Impulse Sound Level", sometimes denoted L_{LM} , of N impulsive sounds, is ten times the logarithm to the base 10 of the arithmetic mean of ten to the power of one tenth the impulse sound level of each impulsive sound.

Algebraically, it can be written as:

$$L_{LM} = 10 \log_{10} \left[\frac{1}{N} \left(10^{dBAI_1/10} + 10^{dBAI_2/10} + \dots + 10^{dBAI_N/10} \right) \right]$$

where, $dBAI_1, dBAI_2, \dots, dBAI_N$, are the N impulse sound levels.

(18) Overpressure

The "overpressure" at a point due to an acoustic disturbance is the instantaneous difference at that point between the peak pressure during the disturbance and the ambient atmospheric pressure. The unit of measurement is the pascal. One pascal, abbreviated Pa, is the same as one newton per square metre, abbreviated N/m^2 .

(19) Overpressure Level

The "overpressure level" is twenty times the logarithm to the base 10 of the ratio of the peak pressure to the reference pressure of 20 μPa .

(20) Peak Particle Velocity

The "peak particle velocity" is the maximum instantaneous velocity experienced by the particles of a medium when set into transient vibratory motion. This can be derived as the magnitude of the vector sum of three orthogonal components and is measured in cm/s .

(21) Peak Pressure Level Detector

A "Peak Pressure Level Detector" is a device capable of measuring peak pressure or pressure level perturbations in air and which meets the specifications of Publication NPC-102 - Instrumentation, for Peak Pressure Level Detectors.

(22) Percentile Sound Level

The "x percentile sound level", designated L_x , is the sound level exceeded x percent of a specified time period. It is measured in dBA.

(23) Quasi-Steady Impulsive Sound

"Quasi-Steady Impulsive Sound" is a sequence of impulsive sounds emitted from the same source, having a time interval of less than 0.5 s between successive impulsive sounds.

(24) Slow Response

"Slow response" is a dynamic characteristic setting of a sound level meter meeting the applicable specifications of Publication NPC-102 - Instrumentation.

(25) Sound

"Sound" is an oscillation in pressure, stress, particle displacement or particle velocity, in a medium with internal forces (e.g. elastic, viscous), or the superposition of such propagated oscillations, which may cause an auditory sensation.

(26) Sound Level

"Sound level" is the A-weighted sound pressure level.

(27) Sound Level Meter

A "sound level meter" is an instrument which is sensitive to and calibrated for the measurement of sound.

(28) Sound Pressure

The "sound pressure" is the instantaneous difference between the actual pressure and the average or barometric pressure at a given location. The unit of measurement is the micropascal (μPa) which is the same as a micronewton per square metre ($\mu\text{N}/\text{m}^2$).

(29) Sound Pressure Level

The "sound pressure level" is twenty times the logarithm to the base 10 of the ratio of the effective pressure (p) of a sound to the reference pressure (p_r) of $20 \mu\text{Pa}$. Thus the sound pressure level in dB = $20 \log_{10} \frac{p}{p_r}$.

(30) Tonality

A "tone" or a "tonal sound" is any sound which can be distinctly identified through the sensation of pitch.

(31) Vibration

"Vibration" is a temporal and spatial oscillation of displacement, velocity or acceleration in a solid medium.

(32) Vibration Velocity Detector

A "Vibration Velocity Detector" is a device which is capable of measuring vibration velocity and which meets the specifications of Publication NPC-102 - Instrumentation, for Vibration Velocity Detectors.

Publication NPC-102

Instrumentation

1. Scope

This Publication sets out minimum specifications for equipment used for the measurement of sound and vibration. For most of the specifications the International Electrotechnical Commission (IEC) recommended standards 123 (First edition 1961), 179 (Second edition 1973) and 179A (First supplement to IEC 179, published 1973) have been adopted. In some cases, these standards are amended or augmented for greater precision.

TABLE 102-1

NPC-102 Section	Type of Instrument	Application
3	General Purpose Sound Level Meter	Non-impulsive sounds
4	Impulse Sound Level Meter	Impulsive sounds
5	Peak Pressure Level Detector	Peak pressure perturbations
6	Type B Integrating Sound Level Meter	Varying sounds of low crest factor
7	Type A Integrating Sound Level Meter	Varying sounds of high crest factor
8	Vibration Velocity Detector	Peak vibration velocity in solids
9	Acoustic Calibrator	Calibration of sound level meters

2. Technical Definitions

The technical terms used in this Publication are defined in the specifications themselves or in Publication NPC-101 - Technical Definitions.

3. General Purpose Sound Level Meter

(1) Purpose

A General Purpose Sound Level Meter is a sound level meter which is intended to be used for the measurement of non-impulsive sounds, without significant A-weighted acoustic energy above 2000 Hz.

(2) Specifications

A sound level meter which meets the following specifications is a General Purpose Sound Level Meter:

- (a) the sound level meter, including a microphone equipped with a windscreen shall meet the specifications of IEC 123, except that, in addition to meeting the specifications of subclause 5.2 thereof, the microphone of the sound level meter shall also meet the specifications of subclause 5.2 amended by the substitution therein of an angle of incidence of $\pm 30^\circ$ instead of $\pm 90^\circ$, as it therein appears, and by the substitution of Table 102-2 hereof instead of Table 1, as it therein appears;
- (b) the sound level meter shall incorporate A-weighting, which is specified in IEC 123 as optional;
- (c) the sound level meter shall have a minimum usable range of sensitivity of from 40 dBA to 100 dBA and it shall read to an accuracy of ± 1.0 dB over that range;
- (d) a windscreen shall be installed on the microphone and shall not affect by more than 1 dB the tolerance prescribed in clauses (a) and (c);
- (e) the sound level meter, including a microphone equipped with a windscreen, shall, when operated in the presence of wind, indicate a wind-induced sound level not in excess of the relevant value listed in Table 102-3.

4. Impulse Sound Level Meter

(1) Purpose

An Impulse Sound Level Meter is a sound level meter which is intended to be used for the measurement of any sounds, including sounds for which a General Purpose Sound Level Meter may be used.

(2) Specifications

A sound level meter which meets the following specifications is an Impulse Sound Level Meter:

- (a) the sound level meter, including a microphone equipped with a windscreen, shall meet the specifications of a General Purpose Sound Level Meter;

- (b) the sound level meter, including a microphone equipped with a windscreen, shall meet the specifications of IEC 179 and IEC 179A, supplement to IEC 179, including the optional characteristics mentioned in subclause 4.5 of IEC 179A;
- (c) the sound level meter shall incorporate A-weighting as specified in IEC 179.

5. Peak Pressure Level Detector

(1) Purpose

A Peak Pressure Level Detector is a sound level meter which is intended to be used for the measurement of peak pressure perturbations in air. The value indicated by this device is not an average of the pressure level perturbations.

(2) Specifications

A sound level meter which meets the following specifications is a Peak Pressure Level Detector (the features of this device are incorporated in an Impulse Sound Level Meter as specified in section 4 above):

- (a) the microphone of the sound level meter, when equipped with a windscreen, shall perform within a tolerance of ± 1 dB throughout the frequency range of from 5 Hz to 31.5 Hz in the circumstances and conditions for use set out in Table 1 of IEC 179;
- (b) the sound level meter without the microphone shall be capable of providing linear response as specified in subclause 4.5 of IEC 179, within a tolerance of ± 1 dB throughout the frequency range of from 5 Hz to 15 kHz;
- (c) the sound level meter shall incorporate the optional characteristics specified in subclause 4.5 of IEC 179A;
- (d) the sound level meter shall meet the specifications set out in IEC 179 clause 3, subclauses 4.1, 4.2, 4.4, 4.5, 4.7, 4.8, clause 5, subclauses 6.2, 6.3, 6.4, 6.5, 6.8, 6.9, 7.1 through 7.9, 7.11, 8.1, 8.2, 8.3, 8.6 through 8.9, and the appropriate specifications of clause 10.

6. Type B Integrating Sound Level Meter

(1) Purpose

- (a) An Integrating Sound Level Meter is a sound level meter which is intended to be used for the measurement of sound over a period of time, such that the equivalent sound level (L_{eq}) of the sound may be obtained.
- (b) The Type B Integrating Sound Level Meter is specified with sufficient dynamic range and measurement precision to measure equivalent sound levels of general sounds that exceed limitations set out in this by-law.
- (c) Either a Type A or Type B Integrating Sound Level Meter may be used for most such applications, but a Type A Integrating Sound Level Meter must be used when the sound under study

is Quasi-Steady Impulsive Sound (see NPC-103 - Procedures, sections 3 and 4) or when the operational dynamic range greatly exceeds 40 dB.

(2) General Description

The tolerances specified for the microphone, weighting and amplifier of a Type B Integrating Sound Level Meter are the same as those specified for a General Purpose Sound Level Meter in section 3 of this Publication. The computational portions of the instrument must operate within a net accuracy of ± 1 dB for time periods of 20 minutes to one hour over a dynamic range of at least 40 dB with test signals having a crest factor (as defined in IEC 179A) up to 3. An operator-activated switch is included to inhibit the integration function alone and, if the system includes an elapsed-time clock, to inhibit both the integration and time summation functions.

(3) Specifications

A sound level meter which meets the following specifications is a Type B Integrating Sound Level Meter:

- (a) the instrument will generally be a combination of microphone, amplifier, A-weighting network, computation circuit to obtain the integral of the mean square A-weighted pressure, display and a means of inhibiting the integration, but may vary from the above provided that it performs the same functions within the tolerances set out below;
- (b) the instrument may include computational circuitry to calculate and display the equivalent sound level directly;
- (c) the microphone of the instrument shall meet the specifications of clause 5 of IEC 123, except that, in addition to meeting the specifications of subclause 5.2 thereof, the microphone shall also meet the specifications of subclause 5.2 amended by the substitution therein of an angle of incidence of $\pm 30^\circ$ instead of $\pm 90^\circ$, as it therein appears, and by the substitution of Table 102-2 hereof instead of Table 1, as it therein appears;
- (d) a windscreen shall be installed on the microphone during operation and shall not affect by more than 1 dB the tolerance prescribed in clause (c);
- (e) the sound level meter, including a microphone equipped with a windscreen, shall, when operated in the presence of wind, indicate a wind-induced sound level not in excess of the relevant value listed in Table 102-3.
- (f) the A-weighting network shall meet the specifications of Table II and Figure I of IEC 123;
- (g) the amplifier shall meet the specifications of subclauses 7.2, 7.3 and 7.11 of IEC 123;

- (h) for each sensitivity setting of the instrument the amplifier shall have a power handling capacity at least 10 dB greater than the maximum sound level specified for that sensitivity setting;
- (i) if the computation circuit is of the sampling (digital) type, when operating in conjunction with the microphone, windscreen, A-weighting network and amplifier, it shall generate a signal proportional to the mean square A-weighted pressure with a 1 ± 0.25 s exponential averaging time constant;
- (j) the computation circuit shall integrate the mean square A-weighted pressure and shall be capable of doing so on each sensitivity setting for a minimum of 6 minutes at the maximum sound level specified for that sensitivity setting;
- (k) if the computation circuit is not capable of meeting the specification of clause (j) with the reference therein to "6 minutes" changed to "60 minutes", then the device shall be provided with a means to indicate to the operator when the integration capability has been exceeded;
- (l) if the computational circuit is of the sampling (digital) type, sampling shall take place at least twice per second;
- (m) the computation circuit shall operate over the usable dynamic range of the instrument with a linearity of ± 1 dB for any sound with a ratio of peak pressure to root mean square pressure up to 3 (crest factor up to 3);
- (n) an operator-activated switch shall be provided to inhibit integration or, if the instrument has an internal elapsed time clock, to inhibit both integration and accumulation of time;
- (o) the combination of windscreen, microphone, A-weighting network, amplifier and computation circuit shall have a usable dynamic range extending at least from 50 dBA to 90 dBA and the manufacturer shall specify the usable dynamic range;
- (p) the instrument may be provided with more than one sensitivity setting and the manufacturer shall specify the minimum and maximum input sound level for each sensitivity setting;
- (q) if the maximum sound level specified for any sensitivity setting is less than 100 dBA, the system shall include a means of indicating to the operator that the maximum input sound level for that sensitivity setting has been exceeded and such indication shall be maintained until cancelled by the operator;
- (r) the display shall indicate either,
 - (i) an output proportional to the integrated mean square A-weighted pressure, or
 - (ii) the integrated mean square A-weighted pressure divided by the duration of the period of time for which the equivalent sound level is to be determined, or

- (iii) the equivalent sound level for the period of time for which the equivalent sound level is to be determined;
- (s) it shall be possible to read from the display or to calculate from the reading of the display, the equivalent sound level to a resolution of ± 1 dB over the usable dynamic range of the instrument for integration times from 20 minutes to 60 minutes;
- (t) if the indication of the display is as described in subclause (ii) or (iii) of clause (r), the instrument shall include an elapsed-time clock;
- (u) the complete instrument shall follow the recommendations and meet the specifications of subclauses 7.4, 7.5, 7.6, 7.7, 7.8 and 7.9 of IEC 123; and
- (v) the instrument shall include a means of determining whether the battery of the instrument if any, has sufficient life to permit proper operation for a period of at least one hour.

7. Type A Integrating Sound Level Meter

(1) Purpose

- (a) An Integrating Sound Level Meter is a sound level meter which is intended to be used for the measurement of sound over a period of time, such that the equivalent sound level (L_{eq}) of the sound may be obtained.
- (b) The Type B Integrating Sound Level Meter is specified with sufficient dynamic range and measurement precision to measure equivalent sound levels of general sounds that exceed limitations set out in this by-law.
- (c) Either a Type A or a Type B Integrating Sound Level Meter may be used for most such applications, but a Type A Integrating Sound Level Meter must be used when the sound under study is Quasi-Steady Impulsive Sound (see NPC-103 - Procedures, Sections 3 and 4) or when the operational dynamic range greatly exceeds 40 dB.

(2) General Description

The tolerances specified for the microphone, weighting and amplifier of a Type A Integrating Sound Level Meter are the same as those specified for a General Purpose Sound Level Meter in section 3 of this Publication. The computational portions of the instrument must operate within a net accuracy of ± 1 dB for time periods of 20 minutes to one hour over a dynamic range of at least 80 dB with test signals having a crest factor (as defined in IEC 179A) up to 5. An operator activated switch is included to inhibit both the integration and time summation functions.

(3) Specifications

A sound level meter which meets the following specifications is a Type A Integrating Sound Level Meter:

- (a) the sound level meter shall meet the specifications of a Type B Integrating Sound Level Meter;
- (b) the instrument shall be provided with an internal elapsed-time clock;
- (c) for each sensitivity setting of the instrument, the amplifier shall have a power handling capacity at least 14 dB greater than the maximum sound level specified for that sensitivity setting;
- (d) the computation circuit shall operate over the usable dynamic range of the instrument with a linearity of ± 1 dB for any sound with a ratio of peak pressure to root mean square pressure up to 5 (Crest Factor up to 5); and
- (e) the combination of windscreen, microphone, A-weighting network, amplifier and computation circuit shall have a usable dynamic range extending at least from 40 dBA to 120 dBA.

8. Vibration Velocity Detector(1) Purpose

A Vibration Velocity Detector is a device intended to be used for the measurement of the peak particle velocity of a solid surface.

(2) Specifications

A device which meets the following specifications is a Vibration Velocity Detector:

- (a) the device shall include either a transducer which responds to the total vibration vector or three transducers which have their axes of maximum sensitivity mutually orthogonal $\pm 1^\circ$;
- (b) where three transducers are used to measure three mutually orthogonal components of vibration, the response of any one of the transducers to vibration in the plane normal to its axis of maximum sensitivity shall be less than 10% of its response to the same vibration along its axis of maximum sensitivity;
- (c) the output of the device shall be proportional to the velocity of the surface on which the transducer is, or the transducers are, mounted and the output of the device shall be in such form that the device indicates, or can be used to calculate, the peak particle velocity in the frequency range of from 5 Hz to 500 Hz over a range of peak particle velocity of from 0.25 cm/s to 10 cm/s with a tolerance of $\pm 10\%$; and

- (d) it shall be possible to field-calibrate the device with an accuracy of $\pm 5\%$ using either a reference electrical signal in series with the equivalent transducer impedance or a reference vibration source.

9. Acoustic Calibrator

(1) Purpose

An Acoustic Calibrator is an electro-mechanical or mechanical device which produces sound of a known frequency and which, when coupled to a sound level meter, produces a predictable response in the sound level meter if the sound level meter is operating properly at the calibration frequency.

(2) Specifications

A device, capable of producing sound, which meets the following specifications is an Acoustic Calibrator:

- (a) the device shall be capable of being physically attached to a sound level meter in such a way that the device and the sound level meter are "acoustically coupled", that is, sound from the device is transmitted through the air by way of a chamber formed by the attachment of the device to the microphone of the sound level meter;
- (b) the device shall produce sound of a stated frequency, within a frequency tolerance of $\pm 5\%$;
- (c) the manufacturer of the device shall provide with the device, any data required in order to determine the sound level reading which should be indicated on the sound level meter when calibrated for those microphone and sound level meter types with which the manufacturer recommends the device be used. Where additional accessories must be used to provide this sound level reading, the manufacturer shall state that they must be used;
- (d) the maximum tolerance in the sound pressure level generated by the device when coupled to the microphone shall apply over an atmospheric pressure range of 87 kPa to 107 kPa, and shall be ± 0.5 dB over the temperature range of from 0°C to 40°C and ± 1.0 dB over the temperature range of from -10°C to 50°C ;
- (e) if the device is battery powered, means for checking the battery condition shall be included with the device;
- (f) the following data shall be provided with the device by the manufacturer,
 - (i) the nominal sound pressure level produced,
 - (ii) the nominal frequency at which the device operates,
 - (iii) the ranges of temperature and atmospheric pressure over which the device is intended to operate, and the applicable overall sound pressure level tolerance for these ranges.

TABLE 102-2

Permissible Tolerances on Microphone Sensitivity
Over an Angle of $\pm 30^\circ$

Frequency Hz	Permissible Tolerances dB	
	A*	B**
31.5 - 500	± 1	± 1
1000	± 1	± 1
2000	± 2	+ 1 - 2
4000	± 4	+ 1 - 4
8000	± 10	+ 1 - 10

* COLUMN A: The microphone is mounted on the sound level meter.

** COLUMN B: The microphone is physically separated from the sound level meter but electrically connected thereto.

TABLE 102-3

Maximum Wind Induced Sound Level Indication Using A-weighting and
Slow Response (where available)

Wind Speed	dBA
15 km/h	41
20 km/h	48
25 km/h	53

Publication NPC-103Procedures1. Scope

This Publication comprises the various measurement procedures to be used in connection with other Publications which provide limits or standards for sound or vibration. Several of the procedures adopted are those of nationally or internationally recognized agencies. Table 103-1 lists the measurement procedures which are included in this Publication.

TABLE 103-1

NPC-103		
Section	Type of Measurement	Procedure
3	Steady or impulsive sound	Ministry
4	Varying sound	Ministry
5	Sound and vibration from blasting	Ministry
6	Powered mobile construction equipment	SAE J88a
7	Pneumatic equipment	MEMAC
8	Small engines	SAE J1046
9	Trucks with governed diesel engines	CSA Z107.22-M

2. Technical Definitions

The technical terms used in a procedure shall have the meaning given either in that procedure or in Publication NPC-101 - Technical Definitions.

3. Procedure for Measurement of Steady or Impulsive Sound(1) (a) Classification

For the purposes of this procedure sounds can conveniently be placed in four mutually exclusive categories as follows:

- (i) impulsive sounds, other than Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from gunshots, certain explosive pest control devices and certain industrial metal working operations (e.g. forging, hammering, punching, stamping, cutting, forming and moulding);
- (ii) Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from pavement breakers, riveting guns, ineffectively muffled internal combustion engines or ineffectively muffled air compressors;
- (iii) buzzing sounds, such as, but not limited to, the sounds from positive displacement blowers, chain saws, small combustion engines and concrete finishers;
- (iv) all other sounds.

(b) Application

This procedure applies to measurements at a point of reception of:

- (i) sound of a type mentioned in category (i) or (ii) of clause (a); and
- (ii) sound of a type mentioned in categories (iii) or (iv) of clause (a), which is always higher than the permissible level or which, when the sound is present, does not vary in level over a range of more than 6 dB during the period of observation.

(2) Instrumentation(a) Sound Level Meter

- (i) An Impulse Sound Level Meter shall be used for the measurement of sound in category (i), (ii) or (iii) of clause 3(1) (a).
- (ii) A General Purpose Sound Level Meter shall be used for the measurement of sound in category (iv) of clause 3(1) (a).
NOTE: An Integrating Sound Level Meter may be used for the measurement of sound in category (iv) of clause 3(1) (a), but the procedure set out in section 4 - Procedure for Measurement of Varying Sound must be used.

(b) Calibrator

An Acoustic Calibrator shall be used.

(c) Windscreen

A windscreen shall be used in all outdoor measurements.

(3) Measurement Location

For sound transmitted solely through air, the measurement location shall be one or more of the following points of reception:

- (a) a location out-of-doors where a person may be exposed to the sound; or
- (b) the plane of an exterior door or window of a room in which a person may be exposed to the sound, where the door or window is open.

(4) Use of Instrumentation(a) Battery Check

If the sound level meter is battery powered the condition of the battery shall be checked after the meter has been allowed to warm up and stabilize. The battery condition shall be rechecked at least once per hour during a series of measurements and at the conclusion of such measurements. The meter shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation.

(b) Calibration

The sound level meter shall be calibrated after the meter has been allowed to warm up and stabilize, at least once per hour during a series of measurements and at the conclusion of such measurements.

(c) Sound Level Meter Settings

Measurements shall be taken using the following response settings:

(i) Impulse Response (dBAI)

The impulse response and A-weighting shall be used for impulsive sound in category (i) of clause 3 (1)(a). An 'impulse hold' facility may be used if available on the meter.

(ii) Slow Response (dBA)

The slow response and A-weighting shall be used for sound in categories (ii), (iii) or (iv) of clause 3 (1)(a).

(d) Instrument Configuration(i) Reflective Surfaces

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface except for the purposes of clause 3(3)(b) and not less than arm's length from the body of the person operating the meter. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter.

For the case of clause 3(3)(b) the microphone shall be in the middle of the aperture located not less than 15 cm from the window frame or door frame.

(ii) Microphone Orientation

The microphone shall be oriented such that the sound to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.

(e) Measurement - Slow Response

(i) Readings Taken

For sound in categories (ii), (iii) or (iv) of clause 3 (1)(a), a minimum of three observations with a minimum observation time of 15 s each shall be made. The observed average reading for each of the observations shall be noted as well as the minimum and the maximum of the range of sound levels during each observation period. If the difference between any two observed average readings is greater than 3 dB, a minimum of six observations shall be made. For the purpose of adjustments for intermittency the duration of the sound in any one hour shall be noted.

(ii) Readings Reported

The arithmetic mean of the observed average readings shall be reported, rounded to the nearest decibel. Adjustments for intermittence and quality of sound shall be made in accordance with Publication NPC-104 - Sound Level Adjustments, and the result shall be reported. The result is the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which the readings were taken pursuant to subclause (i).

(iii) Wide Variation of Sound Levels

If, in making observations pursuant to subclause (i), there is a difference of more than 6 dB between the lowest and highest values of the observed ranges of sound levels, this procedure shall not be used unless the lower limit of each such range is above the maximum permissible level. Instead, the procedure set out in Section 4 - Procedure for Measurement of Varying Sound at a point of reception, shall be used.

(f) Measurement - Impulse Response - Frequent Impulses

(i) Readings Taken

For sound in category (i) of clause 3 (1) (a) not less than 20 impulses shall be measured within a continuous period of 20 minutes and each measurement taken shall be reported.

(ii) Extension of Time

Where a minimum of 20 impulses cannot be measured within a continuous period of 20 minutes pursuant to subclause (i) the time period may be extended to 2 hours if an impulse occurred in each of the four consecutive periods of five minutes each during the initial 20 minute measurement period.

(iii) Level Reported

The Logarithmic Mean Impulse Sound Level (L_{LM}) of the 20 or more measurements shall be calculated and reported to the nearest decibel. This Logarithmic Mean Impulse Sound Level is a valid and effective sound level for any one hour period during which readings were taken pursuant to subclauses (i) and (ii).

(g) Measurement - Impulse Response - Single Event

Readings Taken and Reported

For impulsive sounds in category (i) of clause 3(1)(a), that occur as single, seemingly independent events not normally measurable using the procedure set out in clause (f) for frequent impulses, each impulse shall be independently measured and each impulse sound level reported to the nearest decibel.

(h) Variation in Calibration

Measurements shall not be reported if the sound level meter calibration has changed more than 0.5 dB from the previous calibration.

(i) Weather Conditions

(i) Wind

Measurements shall not be taken unless the wind-induced sound level is more than 10 dB below the measured levels. Reference should be made to Publication NPC-102 - Instrumentation, particularly Table 102-3.

(ii) Humidity

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%).

(iii) Precipitation

Measurements shall not be taken during precipitation.

(iv) Temperature

Measurements shall not be taken when the air temperature is outside the range for which the specification of the instrument is guaranteed by the manufacturer. (Normally, only the lower temperature limit is significant.)

NPC-103

(5) Documentation

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used. (Adapted from CSA Z107.2-1973 Methods for the Measurement of Sound Pressure Levels.)

(a) Acoustic Environment

- (i) Location and description of sound sources.
- (ii) Dimensioned sketch including photographs, if possible, of the location of the sound source and the point of reception, showing all buildings, trees, structures and any other sound reflective surfaces.
- (iii) Physical and topographical description of the ground surface.
- (iv) Meteorological conditions prevailing at the time of the investigation including approximate local wind speed in km/h, wind direction, air temperature in °C, approximate relative humidity and extent of cloud cover.

(b) Instrumentation

All the equipment used for making sound level measurements shall be listed, including:

- (i) type, model and serial number of sound level meter;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) extension cables and additional amplifier, if used.

(c) Acoustical Data

The measurement details shall be described, including:

- (i) the location of the microphone, using a sketch if necessary;
- (ii) measurements or readings obtained, preferably listed in tabular form, referencing location on a sketch or map, time periods involved, and relevant data required for making calculations;
- (iii) adjustments made for quality of sound or intermittence;
- (iv) details of any calculations;
- (v) comparison with applicable sound level limits, standards or guidelines.

4. Procedure for Measurement of Varying Sound

(1) (a) Classification

For the purposes of this procedure sounds can conveniently be placed in four mutually exclusive categories as follows:

- (i) impulsive sounds, other than Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from gunshots, certain explosive pest control devices and certain industrial metal working operations (e.g. forging, hammering, punching, stamping, cutting, forming and moulding);
- (ii) Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from pavement breakers, riveting guns, ineffectively muffled internal combustion engines or ineffectively muffled air compressors;
- (iii) buzzing sounds, such as, but not limited to the sound from positive displacement blowers, chain saws, small combustion engines and concrete finishers;
- (iv) all other sounds.

(b) Application

This procedure applies to measurements at a point of reception of continuous or intermittent sound mentioned in category (ii), (iii) or (iv) of clause (a).

(2) Instrumentation

(a) Integrating Sound Level Meter

An Integrating Sound Level Meter shall be used which is appropriate for the sound to be measured:

- (i) Either a Type A or Type B Integrating Sound Level Meter may be used for the measurement of sound in category (iv) of clause 4(1)(a);
- (ii) A Type A Integrating Sound Level Meter shall be used for the measurement of sound in categories (ii) or (iii) of clause 4(1)(a).

(b) Calibrator

An Acoustic Calibrator shall be used.

(c) Windscreen

A windscreen shall be used in all outdoor measurements.

(3) Measurement Location

(a) Air-Borne Sound

For sound transmitted solely through air, the measurement location shall be one or more of the following points of reception:

- (i) a location out-of-doors where a person may be exposed to the sound; or
- (ii) the plane of an exterior door or window of a room in which a person may be exposed to the sound, where the door or window is open.

(4) Use of Instrumentation

(a) Battery Check

If the Integrating Sound Level Meter uses a battery, the condition of the battery shall be checked before each measurement, and measurement shall not commence unless the battery has sufficient life remaining to permit proper operation for a period of at least one hour.

(b) Calibration

The Integrating Sound Level Meter shall be calibrated before and after each measurement period.

(c) Instrument Configuration

(i) Reflective Surfaces

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface except for the purposes of subclause 4(3)(a)(ii) and not less than arm's length from the body of the person operating the meter. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter. For the case of subclause 4(3)(a)(ii) the microphone shall be in the middle of the aperture located not less than 15 cm from the window frame or door frame.

(ii) Microphone Orientation

The microphone shall be oriented such that the sound to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.

(d) Extraneous Sources

When measuring the sound from a source, integration shall from time to time be inhibited by the operator immediately when the received sound is dominated by sound from a source other than the source under study and it shall remain inhibited while such a condition persists and for at least 10 seconds thereafter. While integration is inhibited the elapsed time used to calculate the equivalent sound level shall not be allowed to accumulate.

(e) Timing

If the Integrating Sound Level Meter is not provided with an internal elapsed-time clock, the operator shall accumulate the elapsed time during the measurement period by means of a stop-watch or other time measuring device.

(f) Readings

(i) Stationary Source

When measuring the sound from a stationary source, measurements to be used in calculating results shall be taken during a continuous period not in excess of one hour and, for purposes of calculation and reporting of

results, the accumulated elapsed time of measurement as obtained in accordance with clause (d) is deemed to be one hour if the accumulated time is 20 minutes or more. Measurements containing information from an accumulated time period of less than 20 minutes are insufficient for purposes of calculating the equivalent sound level (L_{eq}) of a stationary source.

(ii) Road Traffic Noise Sources

When measuring the sound from road traffic the accumulated elapsed time obtained in accordance with clause (d) shall not be less than twenty minutes and the actual accumulated elapsed time of measurement shall be used for purposes of calculation.

(g) Adjustments

Adjustments for quality of sound shall be made in accordance with Publication NPC-104 - Sound Level Adjustments and the result reported. No adjustment shall be made for intermittence.

(h) Variation in Calibration

A measurement shall not be reported if the Integrating Sound Level Meter calibration after the measurement period is more than 0.5 dB different from that before the measurement commenced.

(i) Weather Conditions

(i) Wind

Measurements shall not be made unless the wind-induced sound level is more than 10 dB below the measured levels. Reference should be made to Publication NPC-102-Instrumentation and particularly Table 102-3.

(ii) Humidity

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%).

(iii) Precipitation

Measurements shall not be taken during precipitation.

(iv) Temperature

Measurements shall not be taken when the air temperature is outside the range for which the specification of the instrument is guaranteed by the manufacturer. (Normally, only the lower temperature limit is significant.)

(j) Readings Reported

(i) For sound from a stationary source, the value to be reported based on measurements made during the accumulated elapsed time of 20 minutes or more and the time period for calculation which is one hour is, after adjustment in accordance with clause (g), the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which measurements were taken pursuant to subclause 4(4)(f)(i).

- (ii) For sound from road traffic, the value to be reported based on measurements made during the accumulated elapsed time of 20 minutes or more and the time period for calculation which is the actual accumulated elapsed time, is the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which measurements were taken pursuant to subclause 4(4)(f)(ii).
- (iii) The one hour equivalent sound level (L_{eq}) shall be reported to the nearest decibel.

(5) Documentation

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used. (Adapted from CSA Z107.2-1973 Methods for the Measurement of Sound Pressure Levels.)

(a) Acoustic Environment

- (i) Location and description of sound sources.
- (ii) A list of the types of extraneous noise sources which caused integration to be inhibited during measurement.
- (iii) Dimensioned sketch including photographs, if possible, of the location of the sound source and the point of reception, showing all buildings, trees, structures and any other sound reflective surfaces.
- (iv) Physical and topographical description of the ground surface.
- (v) Meteorological conditions prevailing at the time of the investigation including approximate local wind speed in km/h, wind direction, air temperature in $^{\circ}\text{C}$, approximate relative humidity and extent of cloud cover.

(b) Instrumentation

All the equipment used for making sound level measurements shall be listed, including:

- (i) type, model and serial number of Integrating Sound Level Meter;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) extension cables and additional amplifier, if used.

(c) Acoustical Data

The measurement details shall be described, including:

- (i) the location of the microphone, using a sketch if necessary;
- (ii) the continuous time period of observation;
- (iii) the accumulated elapsed time of measurement following the procedure of clauses 4(4)(d) and (e);

- (iv) the Integrating Sound Level Meter reading or output and any other relevant data required for calculations;
- (v) adjustments made for quality of sound;
- (vi) details of all calculations;
- (vii) the equivalent sound levels obtained, preferably listed in tabular form, referencing location on a sketch or map;
- (viii) comparison with applicable sound level limits, standards or guidelines.

5. Procedure for Measurement of Sound and Vibration
Due to Blasting Operations

(1) Application

This procedure applies to the measurement of sound (concussion) and vibration due to blasting operations.

(2) Sound

(a) Instrumentation

(i) Measuring Device

A Peak Pressure Level Detector shall be used.

(ii) Calibrator

An Acoustic Calibrator shall be used.

(iii) Windscreen

A windscreen shall be used in all outdoor measurements.

(b) Measurement Location

The measurement location shall be at a point of reception out-of-doors within 7 m of a building.

(c) Use of Instrumentation

(i) Battery Check

If the measuring device is battery powered, the condition of the battery shall be checked after the device has been allowed to warm up and stabilize and after each measurement has been made. The device shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation.

(ii) Calibration

The measuring device shall be calibrated after it has been allowed to warm up and stabilize and after each measurement has been made.

(iii) Meter Setting

The measuring device shall be set to read the peak pressure level using linear response and a 'hold' facility, if available.

(d) Instrument Configuration

(i) Reflective Surfaces

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface and not less than arm's length from the body of the person operating the device. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter.

(ii) Microphone Orientation

The microphone shall be oriented such that the concussion wave to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.

(e) Readings

(i) Peak Pressure Level

The value of peak pressure level reported shall be given to the nearest decibel.

(ii) Variation in Calibration

A measurement shall not be reported if the meter calibration after the measurement is more than 0.5 dB different from that before the measurement.

(iii) Battery Deterioration

A measurement shall not be reported if the battery condition after the measurement is not within the range recommended by the manufacturer for proper operation.

(f) Weather Conditions

(i) Wind

Measurements shall not be reported unless the wind-induced sound pressure level is more than 10 dB below the measured peak pressure level. Reference should be made to Publication NPC-102 - Instrumentation.

(ii) Humidity

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%).

(iii) Precipitation

Measurements shall not be taken during precipitation.

(iv) Temperature

Measurements shall not be taken when the air temperature is outside the range for which the meter specification is guaranteed by the manufacturer. (Normally only the lower temperature limit is significant.)

(3) Vibration

(a) Instrumentation

(i) Measuring Device

A Vibration Velocity Detector shall be used.

(ii) Calibrator

An electrical reference signal of known voltage and frequency shall be used in the field for calibration of the Vibration Velocity Detector excluding the transducer. A reference vibration source shall be used for laboratory calibration of the complete Vibration Velocity Detector.

(b) Measurement Location

Vibration measurements shall be made at a point of reception inside a building below grade or less than 1 m above grade, preferably on a basement floor close to an outside corner.

(c) Use of Instrumentation

(i) Battery Check

If the measuring device is battery powered, the condition of the battery shall be checked after the device has been allowed to warm up and stabilize and after each measurement has been made. The device shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation.

(ii) Calibration

Field calibration shall be carried out before and after each measurement. Laboratory calibration of the complete Vibration Velocity Detector as used in the field, including the transducer, shall be carried out not less than once per calendar year and the results certified.

(d) Instrument Configuration

(i) Mounting

The transducer shall be affixed to a part of the structure so as to prevent movement of the transducer relative to the structure. The preferred structural element is the basement floor as indicated in clause (b).

(ii) Transducer Orientation

If three vector components of vibration velocity are recorded individually, it is preferable to orient the transducers such that the three axes of measurement are (a) vertical, (b) radial (along a horizontal line joining the location of the blast to the location of measurement) and, (c) transverse (along a horizontal line at right angles to the line joining the location of the blast to the location of measurement).

(e) Readings

(i) Peak Particle Velocity

The peak particle velocity in cm/s shall be reported.

(ii) Variation in Calibration

A measurement shall not be reported if calibration after the measurement is more than 5% different from that before the measurement.

(iii) Battery Deterioration

A measurement shall not be reported if the battery condition after the measurement is not within the range recommended by the manufacturer for proper operation.

(4) Documentation

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used.

(a) Description of Area

- (i) Location and description of the blasting operation.
- (ii) Dimensioned sketch including photographs, if possible, of the location of the blasting operation, the nearest premises and the measurement location.
- (iii) Description of the measurement location.
- (iv) Physical and topographical description of the ground surface.
- (v) Meteorological conditions at the time of the investigation, including approximate wind speed in km/h, wind direction, air temperature in degrees Celsius, approximate relative humidity, degree of cloud cover and whether or not a condition of thermal inversion prevailed.

(b) Instrumentation

All the equipment used for making sound and vibration measurements shall be listed, including:

- (i) type, model and serial number of Peak Pressure Level Detector;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) windscreen;
- (v) extension cables and additional amplifiers, if used;
- (vi) type, model and serial number of Vibration Velocity Detector;
- (vii) type, model and serial number of transducers.
- (viii) type, model and serial number of vibration calibrator.

(c) Sound and Vibration Data

The measurement details shall be described, including:

- (i) the location where measurements were taken, the time period involved and the orientation of instrumentation using a sketch, if necessary;
- (ii) details of all calculations;
- (iii) the peak pressure level in dB and/or peak particle velocity in cm/s;
- (iv) comparison with applicable peak pressure limits and/or peak particle velocity limits.

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6. Exterior Sound Level Measurement Procedure For
Powered Mobile Construction Equipment - SAE J88a

SAE J88a Recommended Practice is adopted by the Ministry with the following change:

Where ANSI Type 1 sound level meter specification is referred to, reference shall be made instead to Publication IEC-179 (1973) for Precision sound level meters. (General Purpose Sound Level Meter)

7. MEMAC Test Code For the Measurement of Sound
From Pneumatic Equipment

The MEMAC Test Code For The Measurement Of Sound From Pneumatic Equipment is adopted by the Ministry with the following additional requirement:

For measurement of percussive machines the sound level meter used shall meet the specifications of IEC Publications 179 and 179A (1973). (Impulse Sound Level Meter)

8. Exterior Sound Level Measurement Procedure For
Small Engine Powered Equipment - SAE J 1046

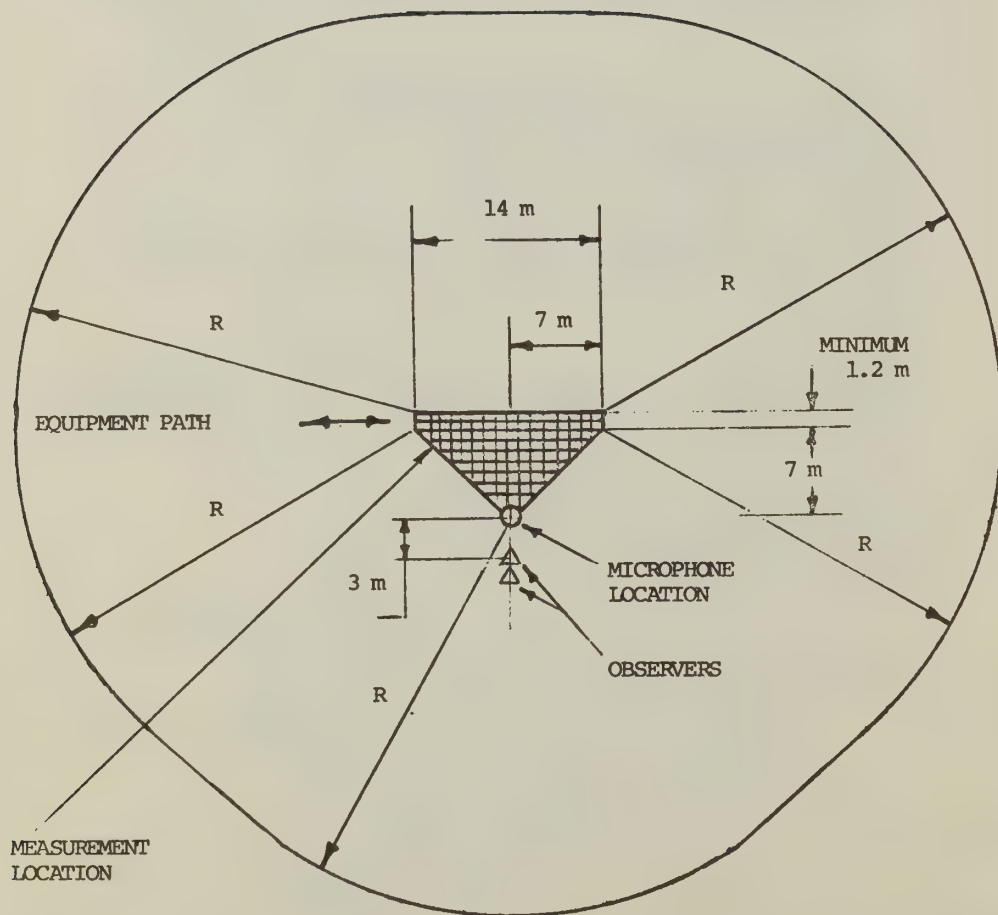
SAE J 1046 - Recommended Practice, is adopted by the Ministry with the following changes:

- (1) Where ANSI Type 1 sound level meter specification is referred to, reference shall be made instead to IEC Publications 179, and 179A (1973). (Impulse Sound Level Meter)
- (2) Replace clause 3.1.1 with the following:
The minimum dimensions of the measurement zone are defined as a path of travel 1.2 m wide by 14 m long plus an adjacent area having the base along the edge of the path of travel and the apex 7 m from the midpoint of the base.
- (3) Replace Fig. 1 with Fig. 103-1, hereof.
- (4) In section 3.3 Measurements, all references to 25 ft. shall be changed to 7 m.

9. Procedure for Measurement of the Maximum Exterior Sound Level
of Stationary Trucks with Governed Diesel Engines-CSA Z107.22-M1977

- (1) CSA Z107.22-M1977 standard is adopted by the Ministry with the following change:

A General Purpose Sound Level Meter shall be used.



REF. US EPA 550/9-74-011

R = 30 m MINIMUM RADIUS

TEST SITE CONFIGURATION FOR EXTERIOR SOUND LEVEL MEASUREMENT
PROCEDURE FOR SMALL ENGINE POWERED EQUIPMENT - SAE J 1046

FIG. 103-1

Publication NPC-104Sound Level Adjustments1. Scope

This Publication refers to the adjustment of a sound level obtained following the procedures set out in either section 3 or 4 of NPC-103 - Procedures.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Intermittence

If a sound is intermittent, the following adjustment shall be subtracted from the observed value:

$$\text{Adjustment} = 10 \log_{10} \frac{1}{x}$$

where x is the fraction of an hour
for which the sound persists.

Such sound level adjustments are approximated in Table 104-1.

4. Adjustment for Special Quality of Sound(1) Tonality

If a sound has a pronounced audible tonal quality such as a whine, screech, buzz, or hum then the observed value shall be increased by 5.

(2) Cyclic Variations

If a sound has an audible cyclic variation in sound level such as beating or other amplitude modulation then the observed value shall be increased by 5.

(3) Quasi-Steady Impulsive Sound

If a sound is Quasi-Steady Impulsive Sound then the observed value shall be increased by 10.

(4) One Adjustment Only

An adjustment may be made under one only of subsections (1), (2) and (3), providing that, if subsection (3) applies, it shall be used in preference to subsection (1) or subsection (2).

TABLE 104-1
Adjustment for Intermittence

Duration of Sound In One Hour (Minutes)	Adjustment
40 - 60	0
20 - 39	3
10 - 19	6
5 - 9	9
3 - 4	12
1 - 2	15
less than 1	20

Publication NPC-105Stationary Sources1. Scope

This Publication refers to sound level limits for sound from stationary sources.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Measurement Standards and Procedures

For the purposes of this Publication all measurements shall be made in accordance with Publication NPC-103 - Procedures.

4. Sound Level Limits - General

(1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, if the sound level is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), the applicable sound level limit is the one hour equivalent sound level (L_{eq}) caused by road traffic as obtained pursuant to Publication NPC-106 - Sound Levels of Road Traffic, for that point of reception and the same time.

(2) For sound from a stationary source, including Quasi-Steady Impulsive Sound but not including other impulsive sound, if the sound level is expressed in terms of the one hour equivalent sound level (L_{eq}), the applicable sound level limit is the one hour equivalent sound level (L_{eq}) caused by road traffic as obtained pursuant to Publication NPC-106 - Sound Levels of Road Traffic, for that point of reception and the same time.

5. Sound Level Limits - Specific Impulsive Sounds

(1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source which is an industrial metal working operation (including but not limited to forging, hammering, punching, stamping, cutting, forming and moulding), if the sound level at a point of reception is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), the applicable sound level limit for that stationary source if it was in operation before January 1, 1980, is 60 dBAI, and otherwise is 50 dBAI.

- 
- (2) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source which is the discharge of firearms on the premises of a licensed gun club, if the sound level at a point of reception is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), the applicable sound level limit for that stationary source if it was in operation before January 1, 1980, is 70 dBAI, and otherwise is 50 dBAI.
- (3) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, characterized by impulses which are so infrequent that they cannot normally be measured using the procedure mentioned in NPC-103 - Procedures, clause 3 (4)(f), if the sound level is expressed in terms of the impulse sound level, the applicable sound level limit is 100 dBAI.

6. Sound Level Limits - Pest Control Devices

- (1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a pest control device employed solely to protect growing crops, if the sound level at a point of reception is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), the applicable sound level limit is 70 dBAI.
- (2) For sound, including Quasi-Steady Impulsive Sound but not including other impulsive sound, from a pest control device employed solely to protect growing crops, if the sound level at a point of reception is expressed in terms of the one hour equivalent sound level (L_{eq}), the applicable sound level limit is 60 dBA.
- (3) The operation of a pest control device outdoors is prohibited during the hours of darkness.

7. Preemption

- (1) For impulsive sound, other than Quasi-Steady Impulsive Sound, if more than one sound level limit in sections 4, 5 and 6 is applicable, the least restrictive applicable sound level limit shall prevail.
- (2) For sound, including Quasi-Steady Impulsive Sound but not including other impulsive sound, if more than one sound level limit in sections 4 and 6 is applicable, the less restrictive applicable sound level limit shall prevail.

8. Exclusion

No restrictions apply to a stationary source resulting in an equivalent sound level (L_{eq}) of 40 dBA or less at a point of reception.

Publication NPC-106Sound Levels of Road Traffic1. Scope

This Publication describes methods to estimate the one hour equivalent sound level (L_{eq}) caused by sound from road traffic. It can be applied in any community where the acoustical environment is dominated by the sound, sometimes called "urban hum", of road traffic. Highly intrusive transportation noise such as aircraft and railway noise is excluded from the determination of this background noise.

2. Technical Definitions

The technical terms in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Road Traffic Noise Derivation

When measurement of the sound level of a stationary source is made, the equivalent sound level at the same point and the same time from road traffic shall be obtained using one of three methods, which are listed in order of preference, as follows:

(1) Measurement

The equivalent sound level of road traffic may be measured at the point of reception when the stationary source under investigation is not audible, within one hour of the period when sound from the stationary source was measured. The equivalent sound level (L_{eq}) of road traffic is obtained in accordance with Publication NPC-103 - Procedures, section 4.

(2) Measurement and Calculation

The equivalent sound level (L_{eq}) may be determined at the point of reception for any hour when the stationary source under investigation is operating and generating sound which, when it is present, does not vary in level over a range of more than 6 dB during the period of observation. The equivalent sound level (L_{eq}) of road traffic and the equivalent sound level (L_{eq}) of the source are obtained simultaneously using two sound level meters. One meter is used to measure the combined sound level of source and road traffic, as if it constituted a stationary source, in accordance with Publication NPC-103 - Procedures, section 4. The second meter is used to measure the sound level from the source only, in accordance with Publication NPC-103 - Procedures, section 4. Use of these procedures requires that operation of the second meter is inhibited at any time when the sound from the stationary source is dominated by any other sound, including the sound from road traffic. The equivalent sound level (L_{eq}) of road traffic is the unknown component of the combined sound level. This unknown component is the logarithmic difference between the combined sound level of source and road traffic and the sound level of the source alone. It may be obtained with the assistance of Table 106-1.

(3) Estimation

In any other case, the equivalent sound level (L_{eq}) of the road traffic is estimated on the basis of traffic flows observed on the contributing roads during the period when the equivalent sound level (L_{eq}) of the source is measured. This estimation is made in accordance with sections 4 and 5. Where the surface of a contributing road is transversely grooved, this method of estimation should not be used.

4. Estimation of Sound Level Based on Traffic

The following procedure describes the manner in which the equivalent sound level of road traffic may be estimated on the basis of traffic flows observed during a period of time for which the equivalent sound level (L_{eq}) of the stationary source under investigation is measured. This method shall not be used when sound from road traffic reflected from a building of more than three stories in height, is clearly audible at the point of reception.

- (1) For each road from which traffic is audible at the point of reception estimate the equivalent sound level (L_{eq}) at the point of reception using the method specified in section 5.
- (2) Add the equivalent sound levels from each road using the decibel addition method in Table 106-1.
- (3) Compare the resultant equivalent sound level (L_{eq}) with the Minimum Value for Hourly L_{eq} for the relevant hour listed in Table 106-2. The higher of the two values is the equivalent sound level (L_{eq}) of road traffic at the point of reception.

5. Road Noise Calculation

The following calculations shall be used to estimate the equivalent sound level (L_{eq}) produced at a point of reception by traffic on a road:

(1) Traffic Volume

Vehicles passing by on the road shall be counted for at least 20 minutes and the time interval of observation shall be noted. The traffic volume reported in vehicles per hour is the number of vehicles counted divided by the time interval as a fraction of an hour.

(2) Percentage Trucks

The percentage of vehicles larger than vans or pickups shall be calculated.

(3) Equivalent Sound Level at 30 m from Road Centre

Determination of the equivalent sound level at a point 30 m from the centre line of the road shall be made using Tables 106-3, -4, -5, -6 and -7. If the total width of a multi-lane road is less than 30 m then it shall be treated as one road. Wider roads shall be treated as two or more roads.

(4) Correction for Road Gradient

For road gradients of 1% or more, add the correction indicated in Table 106-8 to the equivalent sound level (L_{eq}).

(5) Correction for Interrupted Traffic Flow

For a point of reception within 150 m of a traffic light, stop sign, or other interruption in traffic flow, add a correction as indicated in Table 106-9 to the equivalent sound level (L_{eq}).

(6) Measurement of Distance

The distance of the point of reception from the centre of the road shall be measured along the shortest line joining the point of reception to the centre of the road.

(7) Correction for Distance

Table 106-10 shall be used to correct for distance and for the type of ground surface.

(i) Water, all pavements, ice, hard packed gravel, earth and snow are sound reflective surfaces. If more than half of the ground surface between the centre line of the road and the point of reception is sound reflective, the distance correction shall be made using the section of the Table for reflective surfaces.

(ii) If less than half of the surface between the centre line of the road and the point of reception is sound reflective, the total effective height above the ground must be calculated by adding together the height of the point of reception above the ground and the effective source height for the road traffic obtained from Table 106-11. The correction for distance shall be made using the section of Table 106-9 for "other surfaces".

(8) Correction for Sheltering

If the point of reception is shielded from the road by solid barriers, buildings or a row of houses in such a manner that the total unobstructed angle of view of the road from the point of reception is less than 90^0 , subtract 5 from the value obtained above.

(9) Correction for Grooving

Where the surface of the roadway is transversely grooved, this method of estimating the sound level due to road traffic should not be used.

Adding and Subtracting Sound Levels

Difference between higher and lower measured sound levels	To obtain sum of two sound levels add this correction to measured higher value	Subtract this difference from combined sound level to obtain unknown component.
0	3.0	14.0
0.5	3.0	9.0
1.0	2.5	6.0
1.5	2.5	5.0
2.0	2.0	4.0
2.5	2.0	3.5
3.0	2.0	3.0
4.0	1.5	2.0
5.0	1.0	1.5
6.0	1.0	1.0
7.0	1.0	1.0
8.0	1.0	1.0
9.0	0.5	0.5
10.0	0	0.5
11.0	0	0.5
12.0	0	0.5
13.0 and up	0	0

TABLE 106-2
Minimum Value for Hourly L_{eq}
by Time of Day

<u>Time of Day</u>	<u>L_{eq} (dBA)</u>
07 00 - 19 00	50
19 00 - 20 00	49
20 00 - 21 00	48
21 00 - 22 00	47
22 00 - 23 00	46
23 00 - 24 00	45
24 00 - 01 00	44
01 00 - 02 00	43
02 00 - 03 00	41
03 00 - 04 00	40
04 00 - 05 00	42
05 00 - 06 00	45
06 00 - 07 00	48

TABLE 106-3

Given the traffic volume in vehicles per hour and the percentage of vehicles larger than vans or pickups, this Table provides the predicted one hour equivalent sound level at 30 m from the centre line of a road with a speed limit greater than 35 km/h and equal to or less than 50 km/h. For values of traffic volume not shown in the Table, the nearest value in the Table shall be used.

L_{eq} at 30 m; Speed Limit 35 - 50 km/h

Hourly Traffic Volume	Percentage of Vehicles Larger than Vans or Pickups															
	up to 1.0	1.1 to 3.0	3.1 to 5.0	5.1 to 7.5	7.6 to 10	11 to 13	14 to 18	19 to 23	24 to 29	30 to 39	40 to 52	53 to 69	70 to 80	90 or over		
40	49	50	51	52	53	54	55	56	57	58	59	60	61	62	61	62
50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	62	63
63	51	52	53	54	55	56	57	58	59	60	61	62	63	64	63	64
80	52	53	54	55	56	57	58	59	60	61	62	63	64	65	64	65
100	53	54	55	56	57	58	59	60	61	62	63	64	65	66	65	66
125	54	55	56	57	58	59	60	61	62	63	64	65	66	67	66	67
160	55	56	57	58	59	60	61	62	63	64	65	66	67	68	67	68
200	56	57	58	59	60	61	62	63	64	65	66	67	68	69	68	69
250	57	58	59	60	61	62	63	64	65	66	67	68	69	70	69	70
315	58	59	60	61	62	63	64	65	66	67	68	69	70	71	70	71
400	59	60	61	62	63	64	65	66	67	68	69	70	71	72	71	72
500	60	61	62	63	64	65	66	67	68	69	70	71	72	73	72	73
630	61	62	63	64	65	66	67	68	69	70	71	72	73	74	73	74
800	62	63	64	65	66	67	68	69	70	71	72	73	74	75	74	75
1000	63	64	65	66	67	68	69	70	71	72	73	74	75	76	75	76
1250	64	65	66	67	68	69	70	71	72	73	74	75	76	77	76	77
1600	65	66	67	68	69	70	71	72	73	74	75	76	77	78	77	78
2000	66	67	68	69	70	71	72	73	74	75	76	77	78	79	78	79
2500	67	68	69	70	71	72	73	74	75	76	77	78	79	80	79	80
3150	68	69	70	71	72	73	74	75	76	77	78	79	80	81	80	81
4000	69	70	71	72	73	74	75	76	77	78	79	80	81	82	81	82
5000	70	71	72	73	74	75	76	77	78	79	80	81	82	83	82	83
6300	71	72	73	74	75	76	77	78	79	80	81	82	83	84	83	84
8000	72	73	74	75	76	77	78	79	80	81	82	83	84	85	84	85
10000	73	74	75	76	77	78	79	80	81	82	83	84	85	86	85	86

TABLE 106-4

Given the traffic volume in vehicles per hour and the percentage of vehicles larger than vans or pickups, this Table provides the predicted one hour equivalent sound level at 30 m from the centre line of a road with a speed limit greater than 50 km/h and equal to or less than 65 km/h. For values of traffic volume not shown in the Table, the nearest value in the Table shall be used.

L_{eq} at 30 m; Speed Limit 50 - 65 km/h

Hourly Traffic Volume	Percentage of Vehicles Larger than Vans or Pickups															
	up to 1.0	1.1 to 3.0	3.1 to 5.0	5.1 to 7.5	7.6 to 10	11 to 13	14 to 18	19 to 23	24 to 29	30 to 39	40 to 52	53 to 69	70 to 80	90 or over		
40	51	52	53	54	55	55	56	57	58	59	60	61	62	63	62	63
50	52	53	54	55	56	56	57	58	59	60	61	62	63	64	63	64
63	53	54	55	56	57	57	58	59	60	61	62	63	64	65	64	65
80	54	55	56	57	58	58	59	60	61	62	63	64	65	66	65	66
100	55	56	57	58	59	59	60	61	62	63	64	65	66	67	66	67
125	56	57	58	59	60	60	61	62	63	64	65	66	67	68	67	68
160	57	58	59	60	61	61	62	63	64	65	66	67	68	69	68	69
200	58	59	60	61	62	62	63	64	65	66	67	68	69	70	69	70
250	59	60	61	62	63	63	64	65	66	67	68	69	70	71	70	71
315	60	61	62	63	64	64	65	66	67	68	69	70	71	72	71	72
400	61	62	63	64	65	65	66	67	68	69	70	71	72	73	72	73
500	62	63	64	65	66	66	67	68	69	70	71	72	73	74	73	74
630	63	64	65	66	67	67	68	69	70	71	72	73	74	75	74	75
800	64	65	66	67	68	68	69	70	71	72	73	74	75	76	75	76
1000	65	66	67	68	69	69	70	71	72	73	74	75	76	77	76	77
1250	66	67	68	69	70	70	71	72	73	74	75	76	77	78	77	78
1600	67	68	69	70	71	71	72	73	74	75	76	77	78	79	78	79
2000	68	69	70	71	72	72	73	74	75	76	77	78	79	80	79	80
2500	69	70	71	72	73	73	74	75	76	77	78	79	80	81	80	81
3150	70	71	72	73	74	74	75	76	77	78	79	80	81	82	81	82
4000	71	72	73	74	75	75	76	77	78	79	80	81	82	83	82	83
5000	72	73	74	75	76	76	77	78	79	80	81	82	83	84	83	84
6300	73	74	75	76	77	77	78	79	80	81	82	83	84	85	84	85
8000	74	75	76	77	78	78	79	80	81	82	83	84	85	86	85	86
10000	75	76	77	78	79	79	80	81	82	83	84	85	86	87	86	87

TABLE 106-5

Given the traffic volume in vehicles per hour and the percentage of vehicles larger than vans or pickups, this Table provides the predicted one hour equivalent sound level at 30 m from the centre line of a road with a speed limit greater than 65 km/h and equal to or less than 75 km/h. For values of traffic volume not shown in the Table, the nearest value in the Table shall be used.

L_{eq} at 30 m; Speed Limit 65 - 75 km/h

Hourly Traffic Volume	Percentage of Vehicles Larger than Vans or Pickups															
	up	1.1	3.1	5.1	7.6	11	14	19	24	30	40	53	70	90		
	to 1.0	to 3.0	to 5.0	to 7.5	to 10	to 13	to 18	to 23	to 29	to 39	to 52	to 69	to 80	or over		
40	53	54	54	55	56	56	57	58	58	59	60	61	62	63	62	63
50	54	55	55	56	57	57	58	59	59	60	61	62	63	64	63	64
63	55	56	56	57	58	58	59	60	60	61	62	63	64	65	64	65
80	56	57	57	58	59	59	60	61	61	62	63	64	65	66	65	66
100	57	58	58	59	60	60	61	62	62	63	64	65	66	67	66	67
125	58	59	59	60	61	61	62	63	63	64	65	66	67	68	67	68
160	59	60	60	61	62	62	63	64	64	65	66	67	68	69	68	69
200	60	61	61	62	63	63	64	65	65	66	67	68	69	70	69	70
250	61	62	62	63	64	64	65	66	66	67	68	69	70	71	70	71
315	62	63	63	64	65	65	66	67	67	68	69	70	71	72	71	72
400	63	64	64	65	66	66	67	68	68	69	70	71	72	73	72	73
500	64	65	65	66	67	67	68	69	69	70	71	72	73	74	73	74
630	65	66	66	67	68	68	69	70	70	71	72	73	74	75	74	75
800	66	67	67	68	69	69	70	71	71	72	73	74	75	76	75	76
1000	67	68	68	69	70	70	71	72	72	73	74	75	76	77	76	77
1250	68	69	69	70	71	71	72	73	73	74	75	76	77	78	77	78
1600	69	70	70	71	72	72	73	74	74	75	76	77	78	79	78	79
2000	70	71	71	72	73	73	74	75	75	76	77	78	79	80	79	80
2500	71	72	72	73	74	74	75	76	76	77	78	79	80	81	80	81
3150	72	73	73	74	75	75	76	77	77	78	79	80	81	82	81	82
4000	73	74	74	75	76	76	77	78	78	79	80	81	82	83	82	83
5000	74	75	75	76	77	77	78	79	79	80	81	82	83	84	83	84
6300	75	76	76	77	78	78	79	80	80	81	82	83	84	85	84	85
8000	76	77	77	78	79	79	80	81	81	82	83	84	85	86	85	86
10000	77	78	78	79	80	80	81	82	82	83	84	85	86	87	86	87

TABLE 106-6

Given the traffic volume in vehicles per hour and the percentage of vehicles larger than vans or pickups, this Table provides the predicted one hour equivalent sound level at 30 m from the centre line of a road with a speed limit greater than 75 km/h and equal to or less than 90 km/h. For values of traffic volume not shown in the Table, the nearest value in the Table shall be used.

L_{eq} at 30 m; Speed Limit 75 - 90 km/h

		Percentage of Vehicles Larger than Vans or Pickups															
Hourly Traffic Volume	up to 1.0	1.1		3.1		5.1		7.6		11		14		19		24	
		to 3.0	3.0	to 5.0	5.0	to 7.5	7.5	to 10	10	to 13	13	to 18	18	to 23	23	to 29	29
40	55	55	56	56	57	57	58	58	59	59	59	58	59	59	60	59	64
50	56	56	57	57	58	58	59	59	60	60	60	59	60	60	61	60	65
63	57	57	58	58	59	59	60	60	61	61	61	60	61	61	62	61	66
80	58	58	59	59	60	60	61	61	62	62	62	61	62	62	63	62	67
100	59	59	60	60	61	61	62	62	63	63	63	62	63	63	64	63	68
125	60	60	61	61	62	62	63	63	64	64	64	63	64	64	65	64	69
160	61	61	62	62	63	63	64	64	65	65	65	64	65	65	66	65	70
200	62	62	63	63	64	64	65	65	66	66	66	65	66	66	67	66	71
250	63	63	64	64	65	65	66	66	67	67	67	66	67	67	68	67	72
315	64	64	65	65	66	66	67	67	68	68	68	67	68	68	69	68	73
400	65	65	66	66	67	67	68	68	69	69	69	68	69	69	70	69	74
500	66	66	67	67	68	68	69	69	70	70	70	69	70	70	71	70	75
630	67	67	68	68	69	69	70	70	71	71	71	70	71	71	72	71	76
800	68	68	69	69	70	70	71	71	72	72	72	71	72	72	73	72	77
1000	69	69	70	70	71	71	72	72	73	73	73	72	73	73	74	73	78
1250	70	70	71	71	72	72	73	73	74	74	74	73	74	74	75	74	79
1600	71	71	72	72	73	73	74	74	75	75	75	74	75	75	76	75	80
2000	72	72	73	73	74	74	75	75	76	76	76	75	76	76	77	76	81
2500	73	73	74	74	75	75	76	76	77	77	77	76	77	77	78	77	82
3150	74	74	75	75	76	76	77	77	78	78	78	77	78	78	79	78	83
4000	75	75	76	76	77	77	78	78	79	79	79	78	79	79	80	79	84
5000	76	76	77	77	78	78	79	79	80	80	80	79	80	80	81	80	85
6300	77	77	78	78	79	79	80	80	81	81	81	80	81	81	82	81	86
8000	78	78	79	79	80	80	81	81	82	82	82	81	82	82	83	82	87
10000	79	79	80	80	81	81	82	82	83	83	83	82	83	83	84	83	88

TABLE 106-7

Given the traffic volume in vehicles per hour and the percentage of vehicles larger than vans or pickups, this Table provides the predicted one hour equivalent sound level at 30 m from the centre line of a road with a speed limit greater than 90 km/h. For values of traffic volume not shown in the Table, the nearest values in the Table shall be used.

L_{eq} at 30 m; Speed Limit above 90 km/h

Percentage of Vehicles Larger than Vans or Pickups														
Hourly Traffic Volume	up to 1.0	1.1 to 3.0	3.1 to 5.0	5.1 to 7.5	7.6 to 10	11 to 13	14 to 18	19 to 23	24 to 29	30 to 39	40 to 52	53 to 69	70 to 80	90 or over
40	56	56	57	57	58	58	59	59	60	61	62	63	64	64
50	57	57	58	58	59	59	60	60	61	62	63	64	65	65
63	58	58	59	59	60	60	61	61	62	63	64	65	66	66
80	59	59	60	60	61	61	62	62	63	64	65	66	67	67
100	60	60	61	61	62	62	63	63	64	65	66	67	68	68
125	61	61	62	62	63	63	64	64	65	66	67	68	69	69
160	62	62	63	63	64	64	65	65	66	67	68	69	70	70
200	63	63	64	64	65	65	66	66	67	68	69	70	71	71
250	64	64	65	65	66	66	67	67	68	69	70	71	72	72
315	65	65	66	66	67	67	68	68	69	70	71	72	73	73
400	66	66	67	67	68	68	69	69	70	71	72	73	74	74
500	67	67	68	68	69	69	70	70	71	72	73	74	75	75
630	68	68	69	69	70	70	71	71	72	73	74	75	76	76
800	69	69	70	70	71	71	72	72	73	74	75	76	77	77
1000	70	70	71	71	72	72	73	73	74	75	76	77	78	78
1250	71	71	72	72	73	73	74	74	75	76	77	78	79	79
1600	72	72	73	73	74	74	75	75	76	77	78	79	80	80
2000	73	73	74	74	75	75	76	76	77	78	79	80	81	81
2500	74	74	75	75	76	76	77	77	78	79	80	81	82	82
3150	75	75	76	76	77	77	78	78	79	80	81	82	83	83
4000	76	76	77	77	78	78	79	79	80	81	82	83	84	84
5000	77	77	78	78	79	79	80	80	81	82	83	84	85	85
6300	78	78	79	79	80	80	81	81	82	83	84	85	86	86
8000	79	79	80	80	81	81	82	82	83	84	85	86	87	87
10000	80	80	81	81	82	82	83	83	84	85	86	87	88	88

TABLE 106-8

Correction to be Added for Road Gradient (dB)

Given the road gradient and the percentage of vehicles larger than vans or pickups, this Table provides a correction to the predicted one hour equivalent sound level (L_{eq}) representing the increased load imposed on heavy vehicles by a road gradient. For any intermediate value of percentage road gradient not shown in the Table, the nearest value in the Table shall be used.

Percentage of Vehicles Larger than Vans or Pickups	Gradient				
	1%	2%	3%	4%	5%
	dB				
0 - 7	0	1	1	1	2
8 - 12	1	1	2	2	3
13 - 17	1	1	2	3	3
18 or over	1	2	3	3	4

TABLE 106-9

Correction to be Added for Interrupted Traffic Flow (dB)

Percentage of Vehicles Larger than Vans or Pickups	Distance (metres) Point of Reception to Nearest Point of Interrupted Traffic Flow			
	0 to 60	60.1 to 90	90.1 to 120	120.1 to 150
	dB			
0 - 10	2	1	1	1
11- 22	3	2	2	1
23 or over	4	3	2	1

TABLE 106-10

Correction to be Added to (+) or Subtracted from (-) the Equivalent Sound Level (L_{eq}) For Distance from Centre Line of Road to Point of Reception and for Total Effective Height Above Ground

Total Effective Height (metres) Above Ground*	Horizontal Distance (metres) from Centre Line of Road to Point of Reception																					
	9	12	15	18	24	30	37	50	60	75	100	120	150	200	250	300	370	500				
ALL HEIGHTS	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12				
										REFLECTIVE SURFACES												
										OTHER SURFACES												
54.1 and over	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-13	-15				
43.1 - 54	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-7	-8	-10	-12	-14	-16				
34.1 - 43	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-7	-9	-11	-13	-14	-17				
27.1 - 34	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-8	-10	-12	-14	-16	-18				
21.1 - 27	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-7	-9	-11	-13	-15	-17	-19				
17.1 - 21	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-6	-8	-10	-12	-14	-16	-18	-20				
14.1 - 17	+5	+4	+3	+2	+1	0	-1	-2	-3	-5	-7	-9	-11	-13	-15	-17	-18	-20				
11.1 - 14	+5	+4	+3	+2	+1	0	-1	-2	-4	-6	-8	-10	-12	-14	-16	-17	-19	-21				
8.1 - 11	+5	+4	+3	+2	+1	0	-1	-3	-5	-7	-9	-11	-13	-15	-17	-18	-20	-21				
7.1 - 8	+5	+4	+3	+2	+1	0	-2	-4	-6	-8	-10	-12	-14	-16	-17	-19	-20	-22				
5.1 - 7	+5	+4	+3	+2	+1	-1	-3	-4	-7	-9	-11	-13	-14	-16	-18	-19	-20	-22				
4.1 - 5	+5	+4	+3	+2	0	-2	-4	-6	-8	-10	-12	-14	-15	-17	-18	-20	-21	-23				
2.1 - 4	+5	+4	+3	+1	0	-2	-4	-6	-9	-10	-12	-14	-16	-18	-19	-21	-22	-24				
up to 2	+5	+4	+3	+1	-1	-3	-5	-7	-9	-11	-13	-15	-17	-19	-21	-22	-23	-25				

*Total Effective Height is the sum of the Effective Source Height (from Table 106-11) and the height of the point of reception above the ground.

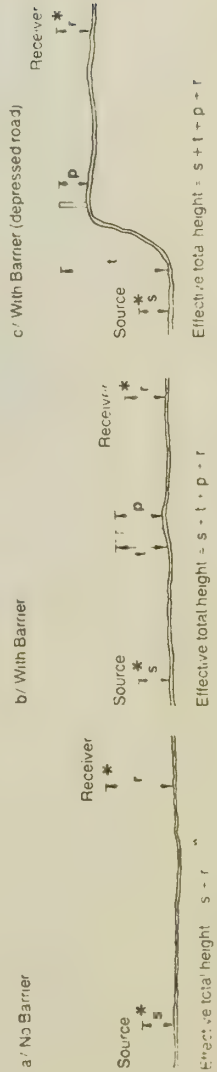


TABLE 106-11

Effective Source Height (metres) for Road Traffic

Percentage of Vehicles Larger than Vans or Pick- ups:	<u>Speed Limit km/h</u>			
	50	65	80	90 or greater
	Source Height (m)			
up to 0.5	0.3	0.3	0.3	0.3
0.6 to 1.5	1.2	1.0	0.6	0.6
1.6 to 3.0	1.5	1.2	1.0	1.0
3.1 to 6.0	1.8	1.5	1.2	1.0
7 to 12	2.1	1.8	1.2	1.2
13 to 24	2.4	1.8	1.5	1.2
25 or over	2.4	2.1	1.5	1.5

Publication NPC-115

Construction Equipment

1. Scope

This Publication sets sound emission standards for various items of new construction equipment according to the date of manufacture of the equipment.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Sound Emission Standards

Tables 115-1 to 115-4 inclusive list Residential Area sound emission standards and Quiet Zone sound emission standards for specific items of new construction equipment measured in accordance with the procedures indicated.

TABLE 115-1

Quiet Zone and Residential Area Sound Emission Standards for
Excavation Equipment, Dozers, Loaders, Backhoes or
Other Equipment Capable of Being Used for
Similar Application

Maximum Sound Level as determined using Publication NPC-103 - Procedures, section 6		
	dBA	
	Power Rating	Power Rating
Date of Manufacture	Less than 75 kW	75 kW and larger
January 1, 1979 to December 31, 1980	85	88
January 1, 1981 and after	83	85

TABLE 115-2Sound Emission Standards for Pneumatic Pavement Breakers

Standard	Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103 - Procedures, section 7 dBA
Quiet Zone Sound Emission and after Standard	Jan. 1, 1979	85
Residential Area Sound Emission Standard	Jan. 1, 1979 to Dec. 31 1980	90
	Jan. 1, 1981 and after	85

TABLE 115-3Sound Emission Standards for Portable Air Compressors

Standard	Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103 - Procedures, section 7 dBA
Quiet Zone Sound Emission to Dec. 31, 1980 Standard	Jan. 1, 1979	76
	Jan. 1, 1981 and after	70
Residential Area Sound Emission Standard	Jan. 1, 1979 and after	76

TABLE 115-4

Sound Emission Standard for Tracked Drills

Standard	Date of Manufacture	Maximum Sound Level as measured using Publication NPG-103 - Procedures, section 6. dBA
Quiet Zone and Residential Area Sound Emission Standard	Jan. 1, 1981 and after	100

Publication NPC-116Residential Air Conditioners1. Scope

This Publication sets sound level limits and sound emission standards for residential air conditioning devices.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Sound Level Limits

Table 116-1 lists the sound level limits for residential air conditioning devices, where the sound level is measured in accordance with the procedure set out in the Table.

TABLE 116-1
Sound Level Limits

<u>Central Air Conditioning Devices</u>		
Date of Installation	L_{eq} (dBA)	Measurement Procedure
Before Jan. 1, 1980	50	NPC-103 - Section 3
Jan. 1, 1980 and after	45	Procedure for Measurement of Steady or Impulsive Sound
<u>Window or Through-the-Wall Air Conditioning Devices</u>		
Date of Installation	L_{eq} (dBA)	Measurement Procedure
Jan. 1, 1978 and after	50	NPC-103 - Section 3 Procedure for Measurement of Steady or Impulsive Sound

4. Sound Emission Standards

Table 116-2 lists the sound emission standards for new residential air conditioning devices, including heat pumps, measured in accordance with the procedures indicated in the Table.

TABLE 116-2

SOUND EMISSION STANDARD FOR RESIDENTIAL AIR CONDITIONERS

(under Preparation)

Publication NPC-117Domestic Outdoor Power Tools1. Scope

This Publication sets sound emission standards for various domestic outdoor power tools.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Sound Emission Standards

Table 117-1 lists sound emission standards for walk-behind powered lawn mowers measured according to the procedure indicated in the Table.

TABLE 117-1Sound Emission Standards for Walk-Behind Powered
Lawn Mowers

Date of Manufacture	Maximum Sound Level as Measured using Publication NPC-103 - Procedures section 8
	dB(A)
Jan. 1, 1979 to Dec. 31, 1980	73
Jan. 1, 1981 and after	69

Publication NPC-118

Motorized Conveyances

1. Scope

This Publication sets sound emission standards for motorized conveyances of various types.

2. Technical Definitions

(1) The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

(2) Definitions Specific to this Publication

Heavy Vehicle

"Heavy vehicle" means a motorized conveyance having a registered gross weight of more than 4,500 kg.

3. Sound Emission Standards - Governed Diesel Engines

Table 118-1 lists for various years of manufacture, the sound emission standard for a heavy vehicle powered by a governed diesel engine when measured in accordance with the procedure set out in the Table.

TABLE 118-1
Sound Emission Standards for Heavy Vehicles
with Governed Diesel Engines

Date of Manufacture	Maximum Sound Level as Measured Using Publication NPC-103 - Procedures, section 9
Prior to Jan. 1, 1979	100
Jan. 1, 1979 and after	95

4. Sound Emission Standards - Gasoline Engines

Table 118-2 lists for various years of manufacture, the sound emission standard for a heavy vehicle powered by an ungoverned gasoline engine, when measured in accordance with the procedure set out in the Table.

TABLE 118-2

UNDER PREPARATION

Publication NPC-119Blasting1. Scope

This Publication refers to limits on sound (concussion) and vibration due to blasting operations.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

3. Measurement Procedures

All measurements of peak pressure level and vibration velocity shall be made in accordance with the "Procedure for Measurement of Sound and Vibration due to Blasting Operations" set out in Publication NPC-103 - Procedures, section 5.

4. Concussion - Cautionary Limit

Subject to section 5 the peak pressure level limit for concussion resulting from blasting operations in a mine or quarry is 120 dB.

5. Concussion - Peak Pressure Level Limit

If the person in charge of a blasting operation carries out routine monitoring of the peak pressure level, the peak pressure level limit for concussion resulting from blasting operations in a mine or quarry is 128 dB.

6. Vibration - Cautionary Limit

Subject to section 7, the peak particle velocity limit for vibration resulting from blasting operations in a mine or quarry is 1.00 cm/s.

7. Vibration - Peak Particle Velocity Limit

If the person in charge of a blasting operation carries out routine monitoring of the vibration the peak particle velocity limit for vibration resulting from blasting operations in a mine or quarry is 1.25 cm/s.

SCHEDULE 2

TO BY-LAW NO. 29-292

(Section 2(1)(b))

GENERAL PROHIBITIONS

1. Racing of any motorized conveyance other than in a racing event regulated by law.
2. The operation of a motor vehicle in such a way that the tires squeal.
3. The operation of any combustion engine without an effective exhaust muffling device in good working order and in constant operation.
4. The operation of a vehicle or a vehicle with a trailer resulting in banging, clanking, squealing or other like sounds due to improperly secured load or equipment, or inadequate maintenance.
5. The operation of an engine or motor in, or on, any motor vehicle or item of attached auxiliary equipment for a continuous period exceeding five minutes, while such vehicle is stationary in a Residential Area or a Quiet Zone, unless,
 - (a) the vehicle is in an enclosed structure constructed so as to effectively prevent excessive noise emission; or,
 - (b) the original equipment manufacturer specifically recommends a longer idling period for normal and efficient operation of the motor vehicle in which case such recommended period shall not be exceeded; or,
 - (c) operation of such engine or motor is essential to a basic function of the vehicle or equipment, including but not limited to, operation of ready-mixed concrete trucks, lift platforms or refuse compactors and heat exchange systems; or,
 - (d) weather conditions justify the use of heating or refrigerating systems powered by the motor or engine for the safety and welfare of the operator, passengers or animals, or the preservation of perishable cargo; or
 - (e) prevailing low temperatures make longer idling periods necessary, immediately after starting the motor or engine; or,
 - (f) the idling is for the purpose of cleaning and flushing the radiator and associated circulation system for seasonal change of antifreeze, cleaning of the fuel system, carburetor or the like, when such work is performed other than for profit.
6. The operation of a motor vehicle horn or other warning device except where required or authorized by law or in accordance with good safety practices.
7. The operation of any item of construction equipment in a Quiet Zone without effective muffling devices in good working order and in constant operation.

SCHEDULE 3

(Section 2(1)(c))

PROHIBITIONS BY TIME AND PLACE

PART I

	<u>Prohibited Period of Time</u>	
	<u>Quiet Zone</u>	<u>Residential Area</u>
1. The operation of any auditory signalling device, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by-law or in accordance with good safety practices.	at any time	11:00 p.m. to 7:00 a.m.
2. The operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.	at any time	11:00 p.m. to 7:00 a.m.
3. All selling or advertising by shouting out-cry or amplified sound.	at any time	9:00 p.m. to 7:00 a.m.
4. Loading, unloading, delivering, packing, unpacking, or otherwise handling any containers, produce, materials, or refuse whatsoever, unless necessary for the maintenance of essential services.	11:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
5. The operation of any construction equipment in connection with construction	7:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
6. The detonation of fireworks or explosive devices.	at any time	11:00 p.m. to 7:00 a.m.
7. The operation of a combustion engine which, (i) is, or (ii) is used in, or (iii) is intended for use in, a toy or a model or replica of a larger device, which model or replica has no function other than amusement and which is not a conveyance.	at any time	11:00 p.m. to 7:00 a.m.
8. The operation of any powered rail car including but not limited to refrigeration cars, locomotives or self-propelled passenger cars, while stationary on property not owned or controlled by a railway governed by The Canada Railway Act.	at any time	11:00 p.m. to 7:00 a.m.
9. The operation of any motorized conveyance other than on a highway or other place intended for its operation.	at any time	11:00 p.m. to 7:00 a.m.
10. The venting, release or pressure relief of air, steam or other gaseous material, product or compound from any autoclave, boiler, pressure vessel, pipe, valve, machine, device or system.	at any time	11:00 p.m. to 7:00 a.m.

Schedule 3 - continued

	<u>Prohibited Period of Time</u>	
	<u>Quiet Zone</u>	<u>Residential Area</u>
11. Persistent barking, calling or whining or other similar persistent noise making by any domestic pet.	at any time	11:00 p.m. to 7:00 a.m.
12. The operation of any powered or non-powered tool for domestic purposes other than snow removal.	9:00 p.m. to 9:00 a.m.	11:00 p.m. to 7:00 a.m.
13. The operation of solid waste bulk lift or refuse compacting equipment.	5:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
	All day Sunday, Statutory Holidays and Civic Holidays	
14. The operation of commercial car wash with air drying equipment.	7:00 p.m. to 7:00 a.m.	7:00 p.m. to 7:00 a.m.
15. The operation of a power assisted hang glider or a parafoil.	at any time	9:00 p.m. to 9:00 a.m.
16. The operation of any item of snow making equipment.		
17. The operation of a sound emitting pest control device.		

PART II

1. For the purpose of this schedule, "motorized conveyance" includes,
 - (a) Snowmobiles;
 - (b) mopeds;
 - (c) go-carts;
 - (d) track bikes;
 - (e) trail bikes.

SCHEDULE 4

To By-law No. 79-292

(Section 23)

1. Operation of authorized emergency vehicles.
2. Operation of bells - utilized as traffic control devices including the following:
 1. Bells at traffic signal locations;
 2. Bells at railway crossings.
3. Operation of City machines and equipment including the following for emergency purposes:
 1. Crosswalk painting machines;
 2. Catchbasin cleaners;
 3. Tree and shrub pruning and mulching equipment.
4. Operation of construction equipment and machinery by or on behalf of the City carrying on or engaged in the performance of public works for emergency purposes.

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SCHEDULE 5

(Section 2 (1))

QUIET ZONES

1. The following areas comprised of lands and premises are hereby designated as quiet zones:

1. Henderson General Hospital.
2. Hamilton General Hospital.
3. Chedoke Hospital.
4. St. Joseph's Hospital.
5. McMaster Hospital.
6. St. Peter's Infirmary.
7. Macassa Lodge.

RESIDENTIAL AREAS

2. Except as provided in section 3, the following areas comprised in Residential Districts in clause "A" of subsection 2 of section 2 of Zoning By-Law No. 6593, are hereby designated as residential areas:

1. "A", "AA" Districts.
2. "B", "B1", "B2" Districts.
3. "C" Districts.
4. "D", "DE", "DE-2", "DE-3" Districts.
5. "E", "E-1", "E-2", "E-3" Districts.
6. "RT-10", "RT-20", "RT-30" Districts.

3. The areas comprised in the Residential Districts designated as residential areas under Section 2 of this schedule, shall not include any lot of record, any part of which is within an area 50 metres wide extending along the whole perimeter of the Industrial Districts south of Barton Street and industrial Districts in the area north of Barton Street, west of Wellington Street referred to in clause "E" of subsection 2 of Section 2 of Zoning By-Law No. 6593, as follows:

1. "J", "JJ", "J-3" Districts.
2. "K", "KK" Districts.

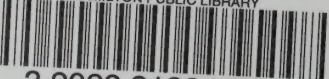
SCHEDULE 6

(Section 6)

TRADITIONAL, FESTIVE, RELIGIOUS and OTHER ACTIVITIES EXEMPTED

1. Ivor Wynne Stadium Events
2. Gage Park Concerts
3. City Hall Concerts
4. Festival of Friends
5. New Years Celebrations
6. Victoria Day Celebrations
7. It's Your Bag Day.

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